



Internal Use Only



Service Manual

Service Manual

KP110



Model : KP110



Date: February, 2008 / Issue 1.0



Table Of Contents

1. INTRODUCTION	5	5. DOWNLOAD	74
1.1 Purpose	5	5.1 Download	74
1.2 Regulatory Information.....	5		
1.3 Abbreviations	7		
2. PERFORMANCE.....	9	6. BLOCK DIAGRAM	80
2.1 H/W Features.....	9	7. CIRCUIT DIAGRAM	81
2.2 Technical Specification	10	8. BGA IC Pin Check	87
3. TECHNICAL BRIEF	15	9. PCB LAYOUT	91
3.1 TX module (SKY77518, U502)	15	10. ENGINEERING MODE	93
3.2 Transceiver (AD6548, U503)	17	10.1 BB Test [MENU 1].....	94
3.3 26 MHz Clock (Crystal, X501))	19	10.2 RF Test [MENU 2].....	95
3.4 MP3 IC (VC0978BRDA, U305)	20	10.3 MF mode [MENU 3]	96
3.5 Baseband Processor (AD6724, U104)...	21	10.4 Trace option [MENU 4]	97
3.6 Keypad Switches and Scanning	27	10.5 Call timer [MENU 5]	97
3.7 Microphone	28	10.6 Fact. Reset [MENU 6].....	97
3.8 Headset Interface.....	29	10.7 S/W version.....	97
3.9 Key Back-light Illumination.....	30		
3.10 LCD Back-light Illumination.....	31		
3.11 VIBRATOR.....	32	11. STAND ALONE TEST	98
3.12 FM RADIO INTERFACE.....	33	11.1 Introduction	98
3.13 Battery Charging	35	11.2 Setting Method.....	98
4. TROUBLE SHOOTING	36	11.3 Means of Test	99
4.1 RF Component.....	36	12. AUTO CALIBRATION	101
4.2 RX Trouble.....	37	12.1 Overview	101
4.3 TX Trouble	40	12.2 Equipment List	101
4.4 Power On Trouble	44	12.3 Test Jig Operation.....	102
4.5 Charging Trouble	46	12.4 Procedure	103
4.6 Vibrator Trouble	48	12.5 AGC	105
4.7 LCD Trouble.....	50	12.6 APC.....	105
4.8 Speaker Trouble	54	12.7 ADC	105
4.9 SIM Card Interface Trouble.....	56		
4.10 Earphone Trouble	58	13. EXPLODED VIEW &	
4.11 KEY backlight Trouble	60	REPLACEMENT PART LIST	107
4.12 Receiver Trouble.....	62	13.1 Exploded View	107
4.13 Microphone Trouble	64	13.2 Replacement Parts	109
4.14 RTC Trouble	66	13.3 Accessory	121
4.15 FM Radio Trouble	68		
4.16 MP3 Trouble	71		

1. INTRODUCTION

1.1 Purpose

This manual provides the information necessary to repair, calibration, description and download the features of this model.

1.2 Regulatory Information

A. Security

Toll fraud, the unauthorized use of telecommunications system by an unauthorized part (for example, persons other than your company's employees, agents, subcontractors, or person working on your company's behalf) can result in substantial additional charges for your telecommunications services. System users are responsible for the security of own system. There are may be risks of toll fraud associated with your telecommunications system. System users are responsible for programming and configuring the equipment to prevent unauthorized use. The manufacturer does not warrant that this product is immune from the above case but will prevent unauthorized use of common-carrier telecommunication service of facilities accessed through or connected to it.

The manufacturer will not be responsible for any charges that result from such unauthorized use.

B. Incidence of Harm

If a telephone company determines that the equipment provided to customer is faulty and possibly causing harm or interruption in service to the telephone network, it should disconnect telephone service until repair can be done. A telephone company may temporarily disconnect service as long as repair is not done.

C. Changes in Service

A local telephone company may make changes in its communications facilities or procedure. If these changes could reasonably be expected to affect the use of the this phone or compatibility with the network, the telephone company is required to give advanced written notice to the user, allowing the user to take appropriate steps to maintain telephone service.

D. Maintenance Limitations

Maintenance limitations on this model must be performed only by the manufacturer or its authorized agent. The user may not make any changes and/or repairs expect as specifically noted in this manual. Therefore, note that unauthorized alterations or repair may affect the regulatory status of the system and may void any remaining warranty.

1. INTRODUCTION

E. Notice of Radiated Emissions

This model complies with rules regarding radiation and radio frequency emission as defined by local regulatory agencies. In accordance with these agencies, you may be required to provide information such as the following to the end user.

F. Pictures

The pictures in this manual are for illustrative purposes only; your actual hardware may look slightly different.

G. Interference and Attenuation

Phone may interfere with sensitive laboratory equipment, medical equipment, etc. Interference from un suppressed engines or electric motors may cause problems.

H. Electrostatic Sensitive Devices

ATTENTION

Boards, which contain Electrostatic Sensitive Device (ESD), are indicated  by the sign.

Following information is ESD handling:

- Service personnel should ground themselves by using a wrist strap when exchange system boards.
- When repairs are made to a system board, they should spread the floor with anti-static mat which is also grounded.
- Use a suitable, grounded soldering iron.
- Keep sensitive parts in these protective packages until these are used.
- When returning system boards or parts like EEPROM to the factory, use the protective package as described.

1.3 Abbreviations

For the purposes of this manual, following abbreviations apply:

APC	Automatic Power Control
BB	Baseband
BER	Bit Error Ratio
CC-CV	Constant Current - Constant Voltage
DAC	Digital to Analog Converter
DCS	Digital Communication System
dBm	dB relative to 1 milli watt
DSP	Digital Signal Processing
EEPROM	Electrical Erasable Programmable Read-Only Memory
ESD	Electrostatic Discharge
FPCB	Flexible Printed Circuit Board
GMSK	Gaussian Minimum Shift Keying
GPIB	General Purpose Interface Bus
GSM	Global System for Mobile Communications
IPUI	International Portable User Identity
IF	Intermediate Frequency
LCD	Liquid Crystal Display
LDO	Low Drop Output
LED	Light Emitting Diode
OPLL	Offset Phase Locked Loop

1. INTRODUCTION

PAM	Power Amplifier Module
PCB	Printed Circuit Board
PGA	Programmable Gain Amplifier
PLL	Phase Locked Loop
PSTN	Public Switched Telephone Network
RF	Radio Frequency
RLR	Receiving Loudness Rating
RMS	Root Mean Square
RTC	Real Time Clock
SAW	Surface Acoustic Wave
SIM	Subscriber Identity Module
SLR	Sending Loudness Rating
SRAM	Static Random Access Memory
PSRAM	Pseudo SRAM
STMR	Side Tone Masking Rating
TA	Travel Adapter
TDD	Time Division Duplex
TDMA	Time Division Multiple Access
UART	Universal Asynchronous Receiver/Transmitter
VCO	Voltage Controlled Oscillator
VCTCXO	Voltage Control Temperature Compensated Crystal Oscillator
WAP	Wireless Application Protocol

2. PERFORMANCE

2.1 H/W Features

Item	Feature	Comment
Standard Battery	Li-ion, 3.7V 900mAh	
Talk time	Up to 230min : GSM Tx Level 7	
Stand by time	Up to 390 hours (Paging Period: 5, RSSI: -85 dBm)	
Charging time	Approx. 3 hours	
RX Sensitivity	-102dBm	
TX output power	GSM900 : 32.5dBm(Level 5), DCS : 29.5dBm(Level 0)	
GPRS compatibility	Class 10	
SIM card type	3V,1.8V Small	
Display	MAIN : CSTN 128 × 128 pixel 65K Color	
Status Indicator	Hard icons. Key Pad 0 ~ 9, #, *, Up/Down/Left/Right/Ok Navigation Key Menu Key, Back Key, Send Key, PWR Key	
ANT	Internal	
EAR Phone Jack	Yes (Stereo)	
PC Synchronization	Yes	
Speech coding	EFR/FR/HR	
Data	Yes	
Vibrator	Yes	
Loud Speaker	Yes	
Voice Recoding	Yes	
Microphone	Yes	
Speaker/Receiver	O/O	
Travel Adapter	Yes	
MIDI	64poly (Mono SPK)	
Camera	No	
Bluetooth / FM Radio	76~108MHz supported	

2. PERFORMANCE

2.2 Technical Specification

Item	Description	Specification					
1	Frequency Band	GSM900 • TX: $890 + 0.2 \times (N-1024)$ MHz (N=975~1023) • RX: $935 + 0.2 \times (N-1024)$ MHz (N=975~1023) DCS • TX: $1710.2 + 0.2 \times (N-512)$ MHz (N=512~885) • RX: $1805.2 + 0.2 \times (N-512)$ MHz (N=512~885)					
2	Phase Error	RMS < 5 degrees Peak < 20 degrees					
3	Frequency Error	< 0.1 ppm					
4	Power Level	GSM900					
		Level	Power	Toler.	Level	Power	Toler.
		5	33 dBm	± 2 dB	13	17 dBm	± 3 dB
		6	31 dBm	± 3 dB	14	15 dBm	± 3 dB
		7	29 dBm	± 3 dB	15	13 dBm	± 3 dB
		8	27 dBm	± 3 dB	16	11 dBm	± 5 dB
		9	25 dBm	± 3 dB	17	9 dBm	± 5 dB
		10	23 dBm	± 3 dB	18	7 dBm	± 5 dB
		11	21 dBm	± 3 dB	19	5 dBm	± 5 dB
		12	19 dBm	± 3 dB			
		DCS					
		Level	Power	Toler.	Level	Power	Toler.
		0	30 dBm	± 2 dB	8	14 dBm	± 3 dB
		1	28 dBm	± 3 dB	9	12 dBm	± 4 dB
		2	26 dBm	± 3 dB	10	10 dBm	± 4 dB
		3	24 dBm	± 3 dB	11	8 dBm	± 4 dB
		4	22 dBm	± 3 dB	12	6 dBm	± 4 dB
		5	20 dBm	± 3 dB	13	4 dBm	± 4 dB
		6	18 dBm	± 3 dB	14	2 dBm	± 5 dB
		7	16 dBm	± 3 dB	15	0 dBm	± 5 dB

2. PERFORMANCE

Item	Description	Specification	
5	Output RF Spectrum (due to modulation)	GSM900	
		Offset from Carrier (kHz).	Max. dBc
		100	+0.5
		200	-30
		250	-33
		400	-60
		600~ <1,200	-60
		1,200~ <1,800	-60
		1,800~ <3,000	-63
		3,000~ <6,000	-65
		6,000	-71
		DCS	
		Offset from Carrier (kHz).	Max. dBc
		100	+0.5
6	Output RF Spectrum (due to switching transient)	200	-30
		250	-33
		400	-60
		600~ <1,200	-60
		1,200~ <1,800	-60
		1,800~ <3,000	-65
		3,000~ <6,000	-65
		6,000	-73
		GSM900	
		Offset from Carrier (kHz)	Max. (dBm)
		400	-19
		600	-21
		1,200	-21
		1,800	-24

2. PERFORMANCE

Item	Description	Specification		
6	Output RF Spectrum (due to switching transient)	DCS		
		Offset from Carrier (kHz).		
		Max. (dBm)		
		400		
		-22		
		600		
7	Spurious Emissions	-24		
		1,200		
8	Bit Error Ratio	-24		
		1,800		
9	RX Level Report Accuracy	-27		
		Conduction, Emission Status		
10	SLR	GSM900		
		BER (Class II) < 2.439% @ -102 dBm		
11	Sending Response	DCS		
		BER (Class II) < 2.439% @ -102 dBm		
		Frequency (Hz)	Max.(dB)	Min.(dB)
		100	-12	-
		200	0	-
		300	0	-12
		1,000	0	-6
		2,000	4	-6
		3,000	4	-6
12	RLR	3,400		
		4,000		
13	Receiving Response	0		
		2 +3 dB		
		Frequency (Hz)	Max.(dB)	Min.(dB)
		100	-12	-
		200	0	-
		300	2	-7
		500	*	-5
		1,000	0	-5
		3,000	2	-5
		3,400	2	-10
		4,000	2	
* Mean that Adopt a straight line in between 300 Hz and 1,000 Hz to be Max. level in the range.				

2. PERFORMANCE

Item	Description	Specification	
14	STMR	13 ± 5 dB	
15	Stability Margin	> 6 dB	
16	Distortion	dB to ARL (dB)	Level Ratio (dB)
		-35	17.5
		-30	22.5
		-20	30.7
		-10	33.3
		0	33.7
		7	31.7
		10	25.5
17	Side Tone Distortion	Three stage distortion $< 10\%$	
18	System frequency (13 MHz) tolerance	≤ 2.5 ppm	
19	32.768KHz tolerance	≤ 30 ppm	
20	Ringer Volume	At least 65 dBspl under below conditions: 1. Ringer set as ringer. 2. Test distance set as 50 cm	
21	Charge Current	Fast Charge : < 600 mA Slow Charge : < 120 mA	
22	Antenna Display	Antenna Bar Number	Power
		5	-85 dBm ~
		4	-90 dBm ~ -86 dBm
		3	-95 dBm ~ -91 dBm
		2	-100 dBm ~ -96 dBm
		1	-105 dBm ~ -101 dBm
		0	~-105 dBm
23	Battery Indicator	Battery Bar Number	Voltage
		Power off	$3.30V \pm 0.05$ V
		0(blink)	$3.54V \pm 0.05$ V
		1	$3.64V \pm 0.05$ V
		2	$3.75V \pm 0.05$ V
		3	$3.76V \pm 0.05$ V ~
24	Low Voltage Warning	3.54 ± 0.05 V (Call) every 1 minutes	
		3.4 ± 0.05 V (Standby)	

2. PERFORMANCE

Item	Description	Specification
25	Forced shut down Voltage	$3.35 \pm 0.05V$
26	Battery Type	1 Li-ion Battery Standard Voltage = 3.7 V Battery full charge voltage = 4.2 V Capacity: 800mAh
27	Travel Charger	Switching-mode charger Input: 100 ~ 240 V, 50/60 Hz Output: 4.8V ~ 6.4V, 400 mA

3. TECHNICAL BRIEF

3.1 TX module (SKY77518, U502)

The SKY77518 is a Transmit and receive front-end-module (FEM) with Integrated Power Amplifier Control (iPAC) for dual-band cellular handsets comprising GSM800 and DCS operation. Designed in a low profile, compact form factor, the SKY77518 offers a complete Transmit VCO-to-Antenna and Antenna-to-Receive SAW filter solution. The FEM also supports class 12 General Packet Radio Service (GPRS) multi-slot operation.

The module consists of a GSM800 PA block and a DCS PA block, impedance-matching circuitry for 50 ohm input and output impedances, TX harmonics filtering, high linearity and low insertion loss PHEMT RF switches, diplexer and a Power Amplifier Control (PAC) block with internal current sense resistor. A custom BiCMOS integrated circuit provides the internal PAC function and decoder circuitry to control the RF switches. The two Heterojunction Bipolar Transistor (HBT) PA blocks are fabricated onto a single Gallium Arsenide (GaAs) die. One PA block supports the GSM800 band and the other PA block supports the DCS band. Both PA blocks share common power supply pads to distribute current. The output of each PA block and the outputs to the two receiver pads are connected to the antenna pad through PHEMT RF switches and a diplexer. The GaAs die, PHEMT die, Silicon (Si) die and passive components are mounted on a multi-layer laminate substrate. The assembly is encapsulated with plastic overmold.

Band selection and control of transmit and receive modes are performed using two external control pads. Refer to the functional block diagram in Figure 3.1 below. The band select pad (BS) selects between GSM and DCS modes of operation. The transmit enable (TX_EN) pad controls receive or transmit mode of the respective RF switch (TX = logic 1). Proper timing between transmit enable (TX_EN) and Analog Power Control (VRAMP) allows for high isolation between the antenna and TX_VCO while the VCO is being tuned prior to the transmit burst.

The SKY77518 is compatible with logic levels from 1.2V to VCC for BS and TX_EN pads, depending on the level applied to the VLOGIC pad. This feature provides additional flexibility for the designer in the selection of FEM interface control logic.

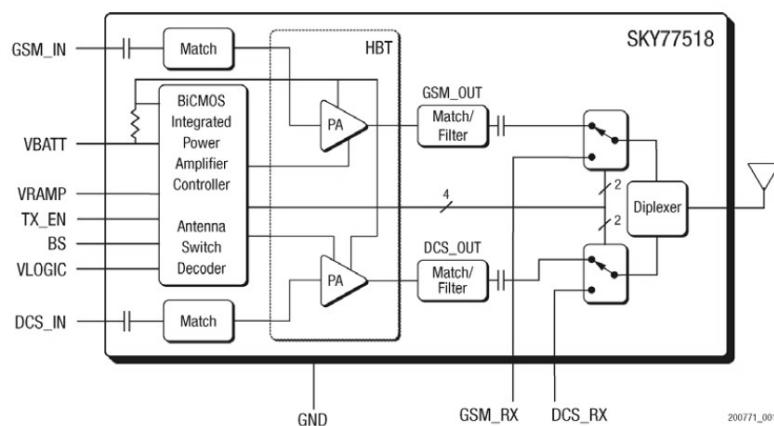


Figure 3.1 Functional Block Diagram

3. TECHNICAL BRIEF

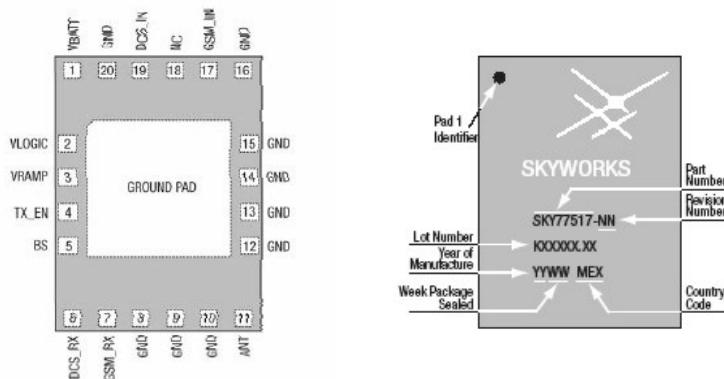


Figure 3.2 Pad configuration (Top view) and case marking

Pin	Name	Description
1	VCATT	Battery input voltage
2	VLOGIC	Control logic level selection/Standy control
3	VRAMP	Analog power control voltage input
4	TX_EN	TX/RX select (mode control)
5	BS	Band Select (mode control)
6	DCS_RX	DCS Receive RF Output (1805-1880 MHz)
7	GSM_RX	GSM Receive RF Output (920-960 MHz)
8	GND	RF and DC Ground
9	GND	RF and DC Ground
10	GND	RF and DC Ground
11	ANT	RF_IN/RF_OUT to Antenna
12	GND	RF and DC Ground
13	GND	RF and DC Ground
14	GND	RF and DC Ground
15	GND	RF and DC Ground
16	GND	RF and DC Ground
17	GSM_IN	RF input 880-915 MHz
18	NC	No Connect
19	DCS_IN	RF input 1710-1785 MHz
20	GND	RF and DC Ground
GND PADS	GROUND GRID	Ground Pads, module underside

Table 3.1 Pad description

Mode	VLOGIC	Input Control Bits	
		TX_En	BS
STANDBY	0	X1	X1
GSM_RX	1	0	0
DCS_RX	1	0	1
GSM_TX	1	1	0
DCS_TX	1	1	1

Table 3.2 Mode Control logic

3.2 Transceiver (AD6548, U503)

The AD6548 provides a highly integrated direct conversion radio solution that combines, on a single chip, all radio and power management functions necessary to build the most compact GSM radio solution possible. The only external components required for a complete radio design are the Rx SAWs, PA, Switchplexer and a few passives enabling an extremely small cost effective GSM Radio solution. The AD6548 uses the industry proven direct conversion receiver architecture of the Othello™ family. For Quad band applications the front end features four fully integrated programmable gain differential LNAs. The RF is then down converted by quad-rature mixers and then fed to the baseband programmable-gain amplifiers and active filters for channel selection. The Receiver output pins can be directly connected to the baseband analog processor. The Receive path features automatic calibration and tracking to remove DC offsets. The transmitter features a translation-loop architecture for directly modulating baseband signals onto the integrated TX VCO. The translation-loop modulator and TX VCO are extremely low noise removing the need for external SAW filters prior to the PA. The AD6548 uses a single integrated LO VCO for both the receive and the transmit circuits. The synthesizer lock times are optimized for GPRS applications up to and including class 12.

AD6548 incorporates a complete reference crystal calibration system. This allows the external VCTCXO to be replaced with a low cost crystal. No other external components are required. The AD6548 uses the traditional VCTCXO reference source. The AD6548 also contains on-chip low dropout voltage regulators (LDOs) to deliver regulated supply voltages to the functions on chip, with a battery input voltage of between 2.9V and 5.5V. Comprehensive power down options are included to minimize power consumption in normal use. A standard 3 wire serial interface is used to program the IC. The interface features low-voltage digital interface buffers compatible with logic levels from 1.6V to 2.9V.

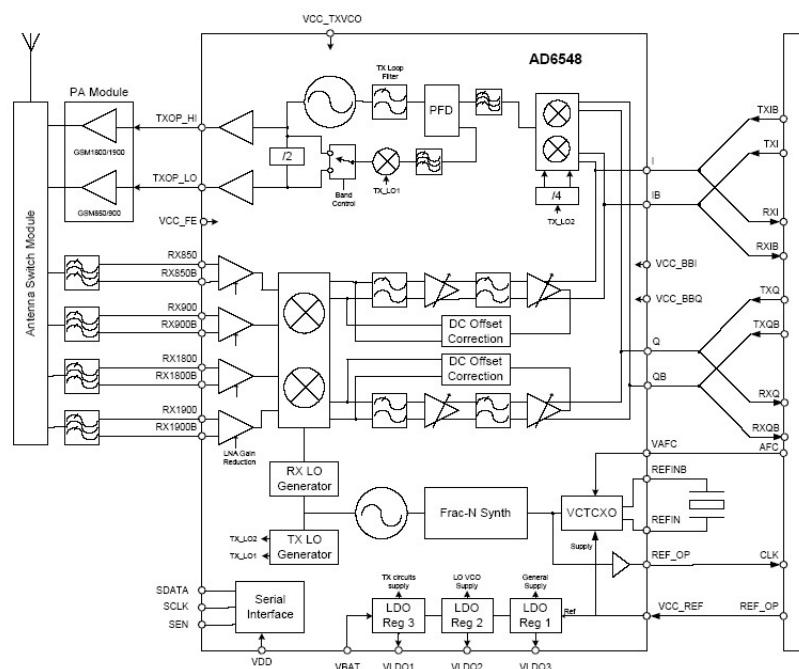
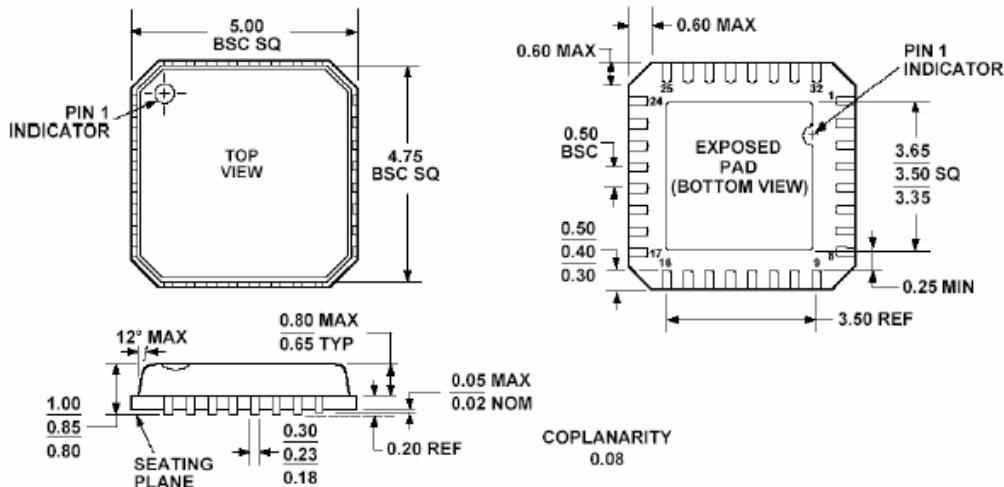


Figure 3.3 AD6548 Block Diagram

3. TECHNICAL BRIEF



COMPLIANT TO JEDEC STANDARDS MO-220-VHHD-2

No	Name	Description	No	Name	Description
1	VCC_FE	Front end supply (IP)	17	VCC_REF	Reference Oscillator Supply (IP)
2	I	I baseband input/output	18	VAFC/ N/C	AD6548 Crystal Freq control (IP) AD6549: Spare Pin
3	IB	I baseband input/output	19	REFIN	Crystal Connection
4	VCC_BBI	Baseband I, TX path supply (IP)	20	REFINB	Crystal Connection
5	SDATA	Serial port data	21	REF_OP	Reference Frequency Output
6	SCLK	Serial port clock	22	QB	Q baseband input/output
7	SEN	Serial port enable	23	Q	Q baseband input/output
8	N/C	Not connected	24	VCC_BBQ	Baseband Q supply (IP)
9	VLDO3	TX LDO Output (1)	25	RX1900B	PCS 1900 LNA input
10	TXOP_LO	Transmit O/P (850/900MHz)	26	RX1900	PCS 1900 LNA input
11	TXOP_HI	Transmit O/P (1800/1900MHz)	27	RX1800B	DCS 1800 LNA input
12	VCC_TXVCO	TX VCO supply (1)	28	RX1800	DCS 1800 LNA input
13	VDD	Serial interface supply	29	RX900B	E-GSM LNA input
14	VBAT	Battery I/P for LDO reg's	30	RX900	E-GSM LNA input
15	VLDO1	LDO regulator Output (2)	31	RX850B	GSM 850 LNA input
16	VLDO2	LO VCO Supply (3)	32	RX850	GSM 850 LNA input

Table 1 AD6548/9 Pin Descriptions

Notes:

- Supply regulated by internal LDO3 and should not be connected to any other supply
- Internally connected as Synth supply (Counters + SDM + Charge pump)
- Supply regulated by internal LDO2 and should not be connected to any other supply

3.3 26 MHz Clock (Crystal, X501)

The 26 MHz clock (X501) consists of a XO (Crystal Oscillator) which oscillates at a frequency of 26 MHz. The AD6548 requires only an external low cost crystal as the frequency reference. The circuitry to oscillate the crystal and tune its frequency is fully integrated. The Oscillator is a balanced implementation requiring the crystal to be connected across 2 pins. There is a programmable capacitor array included for coarse tuning of fixed offsets (e.g. crystal manufacturing tolerance), and an integrated varactor for dynamic control. The oscillator is designed for use with a 26MHz crystal. Dedicated control software ensures excellent frequency stability under all circumstances.

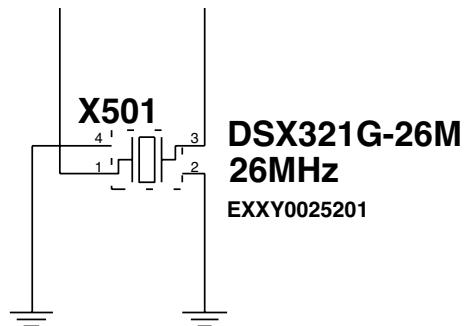


Figure 3.4 CRYSTAL CIRCUIT DIAGRAM

3. TECHNICAL BRIEF

3.4 MP3 IC (VC0978BRDA, U305)

- 1.8-3.3V power supply for digital I/O
- 1.8V power supply for digital core
- PLL input clock 3-36MHz
- PC interface : USB 2.0 device HS,FS, U-disk function, FAT16/32 file system
- storage interface : SD card(1bit/4bit), MMC card, T-flash, 8-bit NAND flash card
- I2S audio interface
- MP3 decoder
- ADPCM decoder
- MIDI 64poly
- Stereo DAC
- Stereo headset amplifiers
- Single speaker amplifiers
- Bypass function

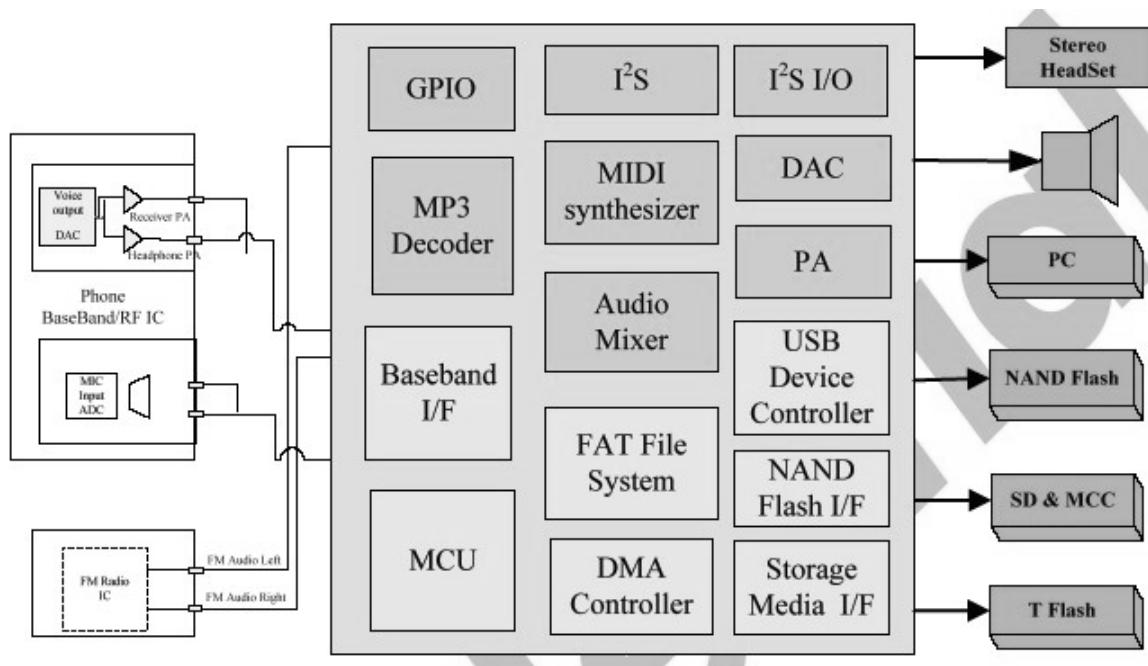


Figure 3.5 VC0978 AUDIO PROCESSOR SYSTEM

3.5 Baseband Processor (AD6724 , U104)

- AD6721 is an ADI designed processor
- AD6721 consists of

FEATURES-DIGITAL

Complete Integrated Programmable Digital Baseband Processor divided into three main subsystems:

Control Processor Subsystem including:

- 32-bit MCU ARM7TDMI® Control Processor
- 39 MHz operation at 1.8V
- 1Mb of on-chip System SRAM Memory

DSP Subsystem including:

- 16-bit Fixed Point DSP Processor
- 91 MIPS[1] at 1.8V
- Data and Program SRAM
- Program Instruction Cache
- Full Rate, Enhanced Full Rate and Half Rate
- Speech Encoding/Decoding
- Capable of Supporting AMR & PDC Speech Algorithms

Peripheral Functions

- Parallel and Serial Display Interface
- Keypad Interface
- Flash Memory Interface
- Page-Mode Flash Support
- 1.8V and 3.0V, 64 kbps SIM Interface
- Universal System Connector Interface
- Data Services Interface
- Battery Interface (e.g. Dallas)

Control of Radio Subsystem

Three independent programmable backlight outputs

Real Time Clock with Alarm

Programmable Power Management and Clock Management Supports 13 MHz and 26 MHz

Input Clocks

Slow Clocking Scheme for Low Idle Mode

Current Power Down modes

On-chip support for GSM Data Services up to 14.4Kbits/sec, GPRS, HSCSD and IrDA

JTAG Interface for Test and In-Circuit Emulation

FEATURES-ANALOG

Baseband Transmit Section

- GMSK Modulator
- I-channel & Q-channel Transmit DACs and Filters
- Power Ramping DAC

Baseband Receive Section

- I-channel and Q-channel Receive ADCs and Filters

Auxiliary Section

- Voltage Reference
- Automatic Frequency Control DAC
- Auxiliary ADC
- Light Controllers

Audio Section

- 8 kHz & 16 kHz Voiceband Codec
- 48 kHz Monophonic DAC
- Power Amplifiers

Power Management Section

- Voltage Regulators
- Battery Charger
- Battery Protection

264-Ball package (17x17 grid), 12x12mm, 0.65mm ball pitch

APPLICATIONS

GSM850/GSM900/DCS1800/PCS1900 Wireless Terminals GSM Phase 2 Compliant

3. TECHNICAL BRIEF

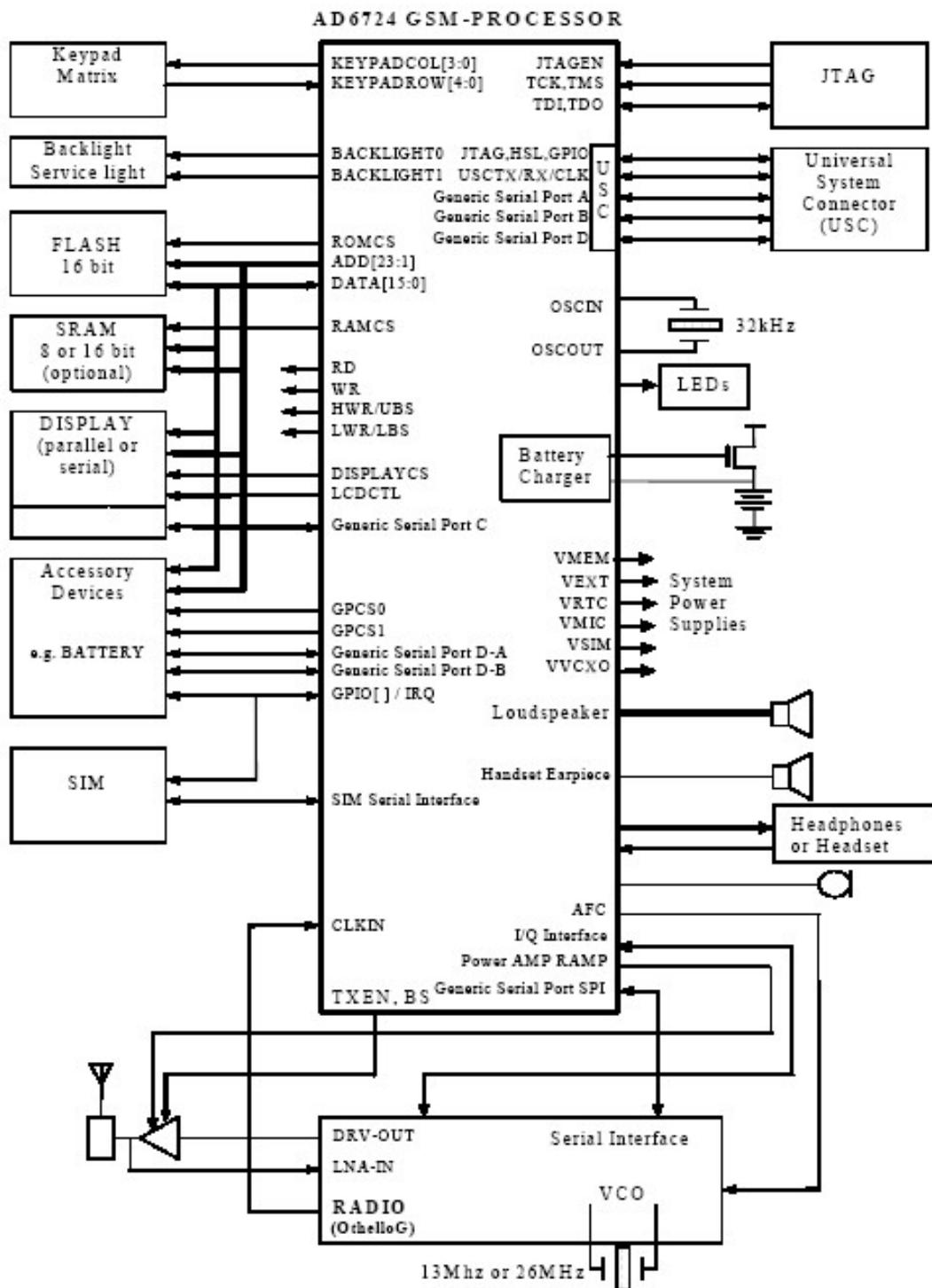


Figure 3.5 SYSTEM INTERCONNECTION OF AD6721 EXTERNAL INTERFACE

3.5.1 Interconnection with external devices

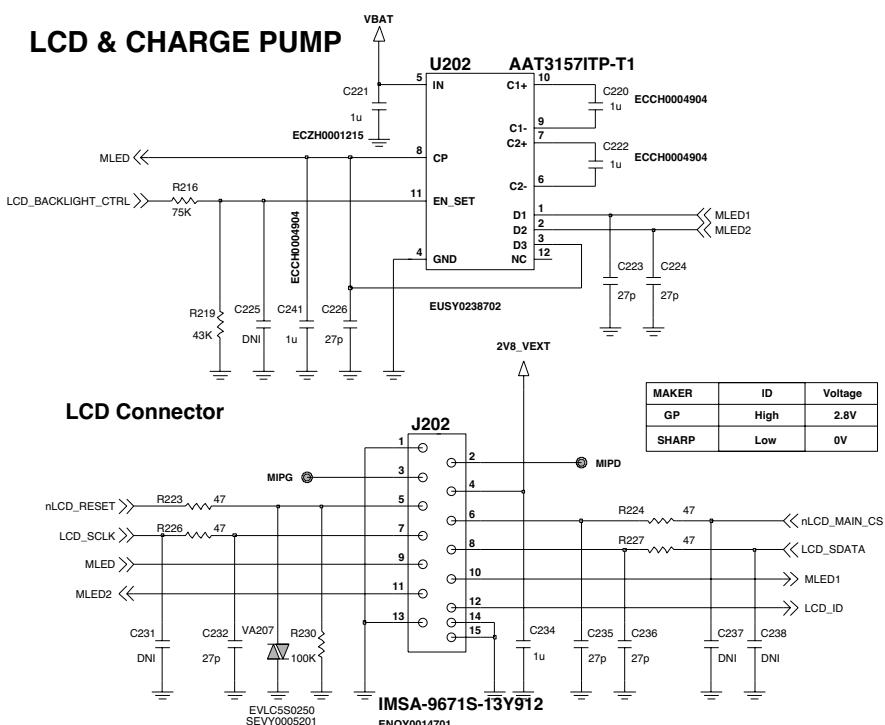
A. RTC block interface

Countered by external X-TAL

The X-TAL oscillates 32.768KHz

B. LCD module interface

Signals	Description
nLCD_MAIN_CS	MAIN LCD driver chip enable. MAIN LCD driver IC has own CS pin
LCD_SCLK	This signal transfer serial clock to driver IC.
LCD_ID	Select LCD module maker(2.8V : GP, 0V : SHARP)
nLCD_RESET	This pin resets LCD module. This signal comes from AD6724 directly.
LCD_SDATA	This signal transfer serial data to driver IC.



3. TECHNICAL BRIEF

The backlight of LCD module is controlled by AD6724 via AAT3157.

The control signals related to Backlight LED are given below.

Signals	Description
MLED	Current source for backlight LED
LCD_BACKLIGHT_CTRL	Control LCD backlight level in 16 steps
MLED[1:2]	This pins are returned-paths for backlight LED current source (MLED)

Table 3.5.B2 DESCRIPTION OF LCD BACKLIGHT LED CONTROL

C. RF interface

The AD6724 control RF parts through PA_BAND, ANT_SW, PA_EN, S_EN, S_DATA, S_CLK

Signals	Description
PA_BAND (GPO 3)	PAM Band Select
ANT_SW (GPO 9)	Antenna switch Band Select
PA_EN (GPO11)	PAM Enable/Disable
S_EN (GPO 19)	PLL Enable/Disable
S_DATA (GPO 20)	Serial Data to PLL
S_CLK (GPO 21)	Clock to PLL

Table 3.5.C RF CONTROL SIGNALS DESCRIPTION

D. SIM interface

The AD6724 provides SIM Interface Module. The AD6724 checks status periodically during established call mode whether SIM card is inserted or not, but it doesn't check during deep Sleep mode. In order to communicate with SIM card, 3 signals SIM_DATA, SIM_CLK, nSIM_RST(GPIO_23) are required. The descriptions about the signals are given by bellow Table 3-5 in detail.

Signals	Description
SIM_DATA	This pin receives and sends data to SIM card. This model can support 3.0 volt and 1.8 volt interface SIM card.
SIM_CLK	Clock 3.25MHz frequency.
SIM_RST (GPIO_23)	Reset SIM block

Table 3.5.D SIM CONTROL SIGNALS DESCRIPTION

SIM SOCKET

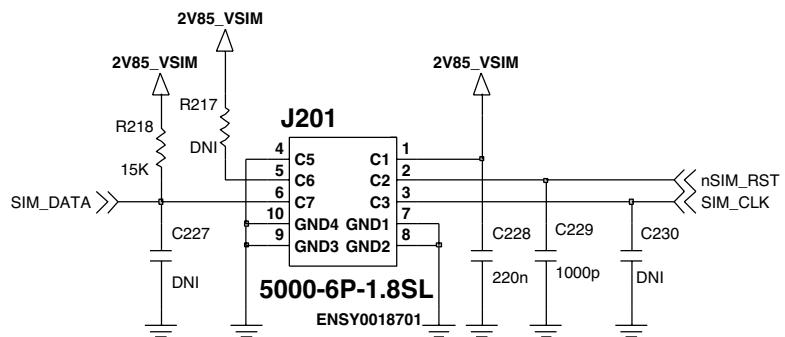


Figure 3.5.D2 SIM Interface of AD6724

3. TECHNICAL BRIEF

E. LDO Block

There are 8 LDOs in the AD6724.

- 1V8_VCORE : supplies Digital baseband Processor core and AD6724 digital core(1.8V, 80mA)
- 2V8_VMEM : supplies external memory and the interface to the external memory on the digital baseband processor (2.8V, 150mA)
- 2V8_VEXT : supplies Radio digital interface and high voltage interface (2.8V, 200mA)
- 2V85_VSIM : supplies the SIM interface circuitry on the digital processor and SIM card (2.85V, 1.8V, 20mA)
- 1V8_VRTC : supplies the Real-Time Clock module (1.8 V, 20 μ A)
- 2V5_VMIC : supplies the microphone interface circuitry (2.5 V, 2 mA)
- 2V75_VVCXO: supplies the voltage controlled crystal oscillator (2.75 V, 10 mA)
- 2V75_VABB: analog basand relulator

3.6 Keypad Switches and Scanning

The key switches are metal domes, which make contact between two concentric pads on the keypad layer of the PCB when pressed. There are 20 switches connected in a matrix of 5 rows by 4 columns, as shown in Figure 3-8, except for the power switch (END), which is connected independently.

Functions, the row and column lines of the keypad are connected to ports of AD6724. The columns are outputs, while the rows are inputs and have pull-up resistors built in. When a key is pressed, the corresponding row and column are connected together, causing the row input to go low and generate an interrupt. The columns/rows are then scanned by AD6724 to identify the pressed key.

KEY Matrix

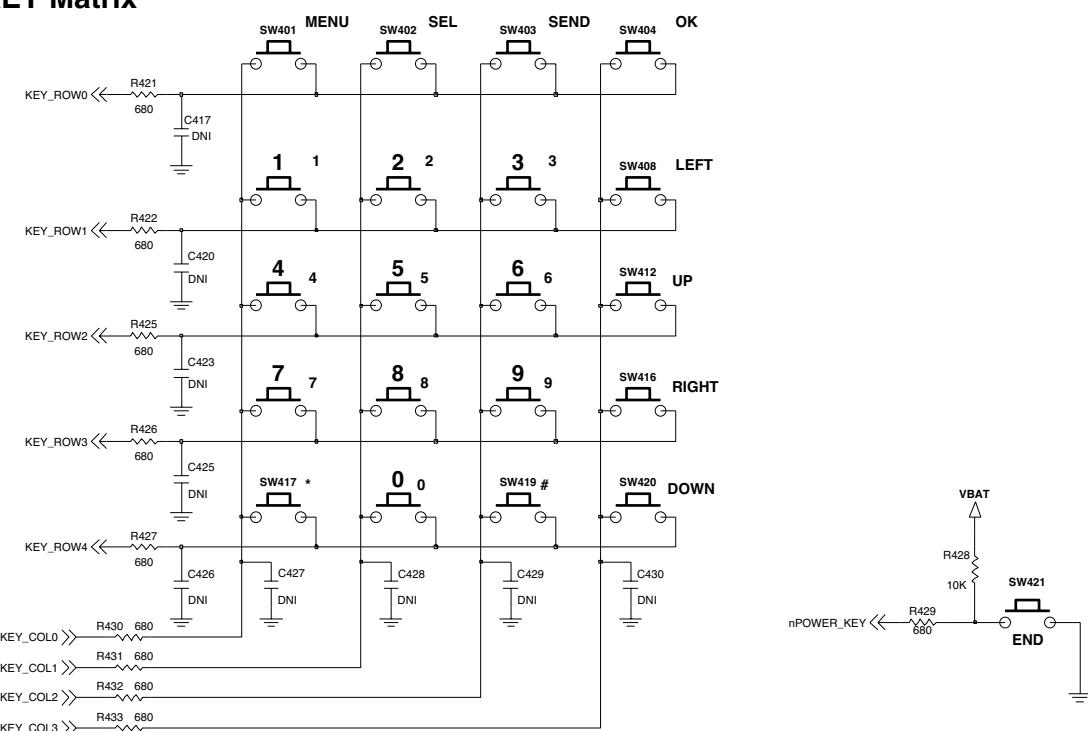


Figure 3.8 Keypad Switches and Scanning

3. TECHNICAL BRIEF

3.7 Microphone

The microphone is placed to the Front cover and soldered to main PCB. The audio signal is passed to VINNORN and VINNORP pins of AD6724. The voltage supply VMIC is output from AD6721, and is a biased voltage for the MIC_P. The MIC_P and MIC_N signals are then A/D converted by the voice band ADC part of AD6724.

The digitized speech (PCM 8KHz ,16KHz) is then passed to the DSP section of AD6724 for processing (coding, interleaving etc).

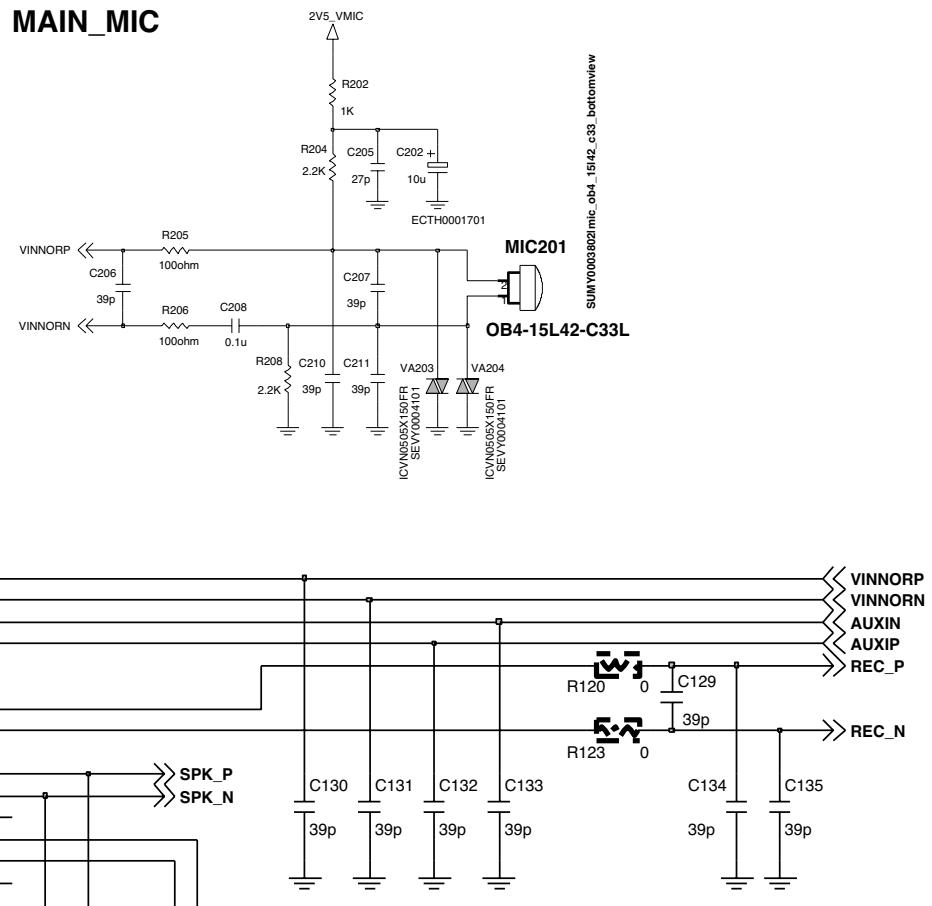


Figure 3.9 Connection between Microphone

3.8 Headset Interface

This phone has 4 electrodes such as GND, AUXIP, AUXIN, nJACK_DET.

Switching from Receiver to Headset Jack

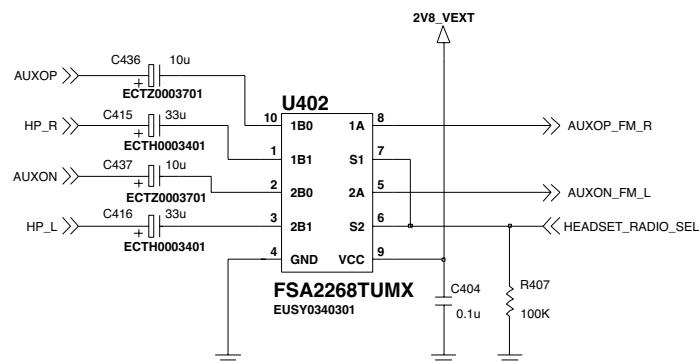
If jack is inserted, JACK_DETECT goes from high to low.

Audio path is switched from receiver to earphone by JACK_DETECT interrupt.

Switching from Headset Jack to Receiver

If jack is removed, JACK_DETECT goes from low to high.

Audio path is switched from earphone to receiver by JACK_DETECT interrupt.



I/O CONNECTOR

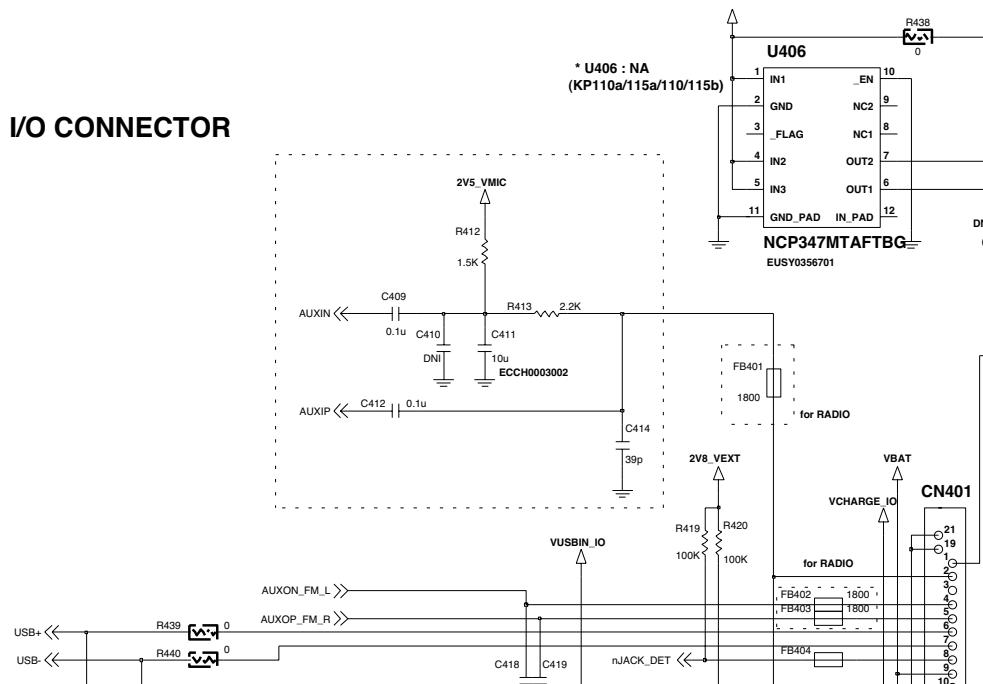


Figure 3.11 HEADSET JACK INTERFACE

3. TECHNICAL BRIEF

3.9 Key Back-light Illumination

In key back-light illumination, there are 6 Blue LEDs in Main Board, which are driven by nKEY_BACKLIGHT signal from AD6724.

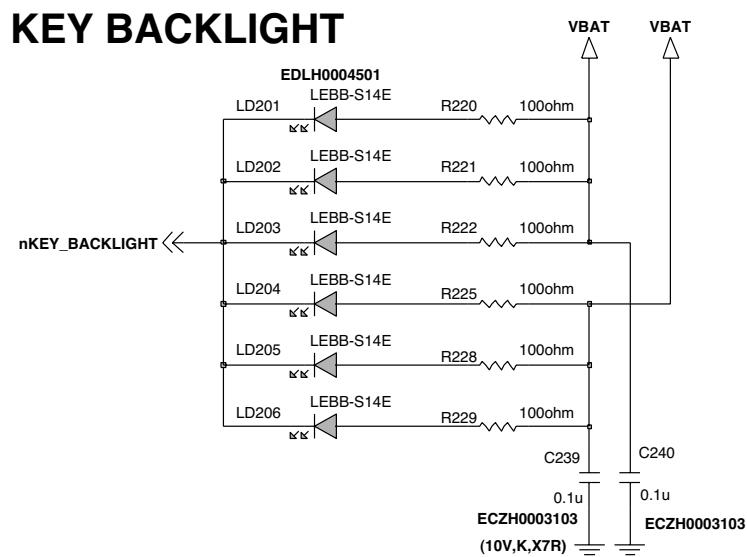


Figure 3.12 KEY BACK-LIGHT ILLUMINTION

3.10 LCD Back-light Illumination

LCD backlight LEDs are controlled by AD6724 via AAT3157, U202.

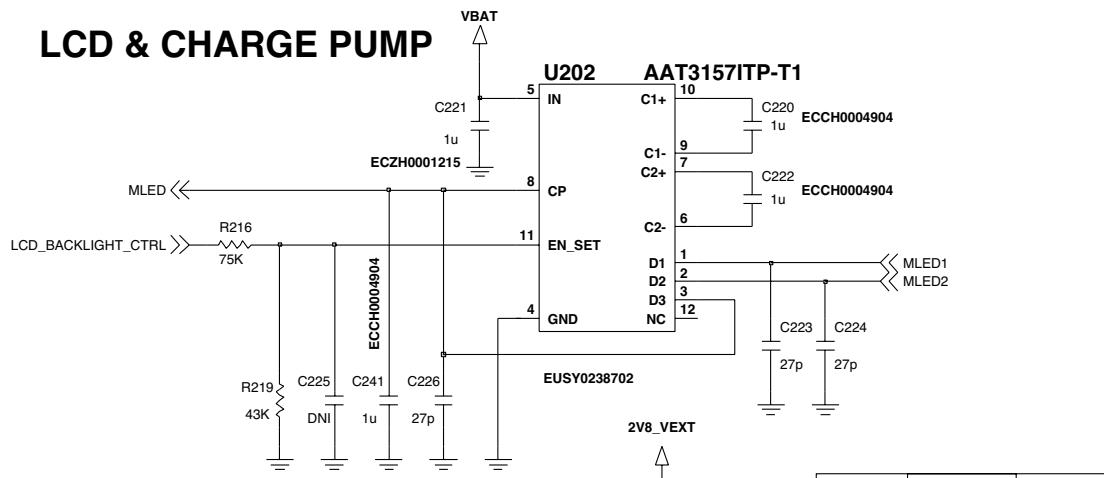


Figure 3.13 MAIN LCD BACKLIGHT ILLUMINATION

Data	Output (mA/Ch)	Data	Output (mA/Ch)
1	20.0	9	5.0
2	17.0	10	4.2
3	14.0	11	3.4
4	12.0	12	2.8
5	10.0	13	1.0
6	8.6	14	0.5
7	7.0	15	0.1
8	6.0	16	0.05

Figure 3-5-3. Charge pump Output Current

3. TECHNICAL BRIEF

3.11 VIBRATOR

The vibrator is placed in the rear cover and contacted to Main PCB. The vibrator is driven from VIBRATOR (USC3) of AD6724

VIBRATOR

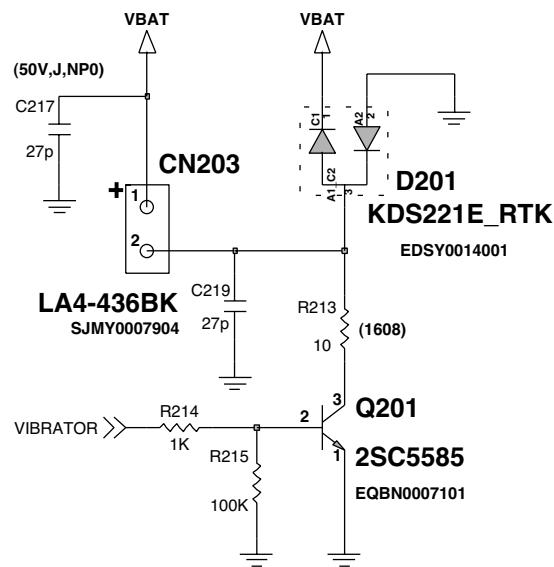


Figure 3.14 VIBRATOR

3.12 FM RADIO INTERFACE

The Si4702 patented digital low-IF architecture reduces external components and eliminates the need for factory adjustments. The receive (RX) section integrates a low noise amplifier (LNA) supporting the worldwide FM broadcast band (76 to 108MHz). An automatic gain control (AGC) circuit controls the gain of the LNA to optimize sensitivity and rejection of strong interferers.

For two-wire operation, a transfer begins with the START condition. The control word is latched internally on rising SCLK edges and is eight bits in length, comprised of a seven bit device address equal to 0010000b and a read/write bit (write = 0 and read = 1).

The device acknowledges the address by setting SDIO low on the next falling SCLK edge. For write operations, the device acknowledge is followed by an eight bit data word latched internally on rising edges of SCLK. The device always acknowledges the data by setting SDIO low on the next falling SCLK edge.

An internal address counter automatically increments to allow continuous data byte writes, starting with the upper byte of register 02h, followed by the lower byte of register 02h, and onward until the lower byte of the last register is reached. The internal address counter then automatically wraps around to the upper byte of register 00h and proceeds from there until continuous writes cease. Data transfer ceases with the STOP command. After every STOP Command, The internal address counter is reset.

For read operations, the device acknowledge is followed by an eight bit data word shifted out on falling SCLK edges. An internal address counter automatically increments to allow continuous data byte reads, starting with the upper byte of register 0Ah, followed by the lower byte of register 0Ah, and onward until the lower byte of the last register is reached.

The internal address counter then automatically wraps around to the upper byte of register 00h and proceeds from there until continuous reads cease.

After each byte of data is read, the controller IC should return an acknowledge if an additional byte of data will be requested. Data transfer ceases with the STOP command. After every STOP command, the internal address counter is reset.

3. TECHNICAL BRIEF

FM RADIO

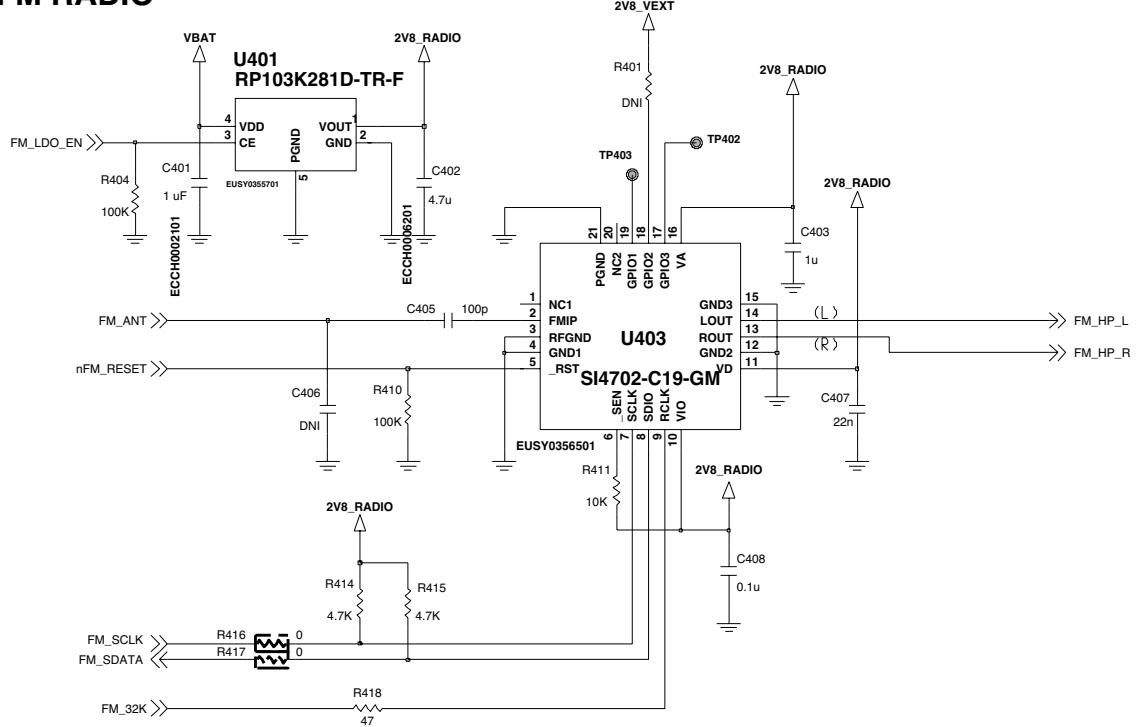


Figure 3.15 FM RADIO

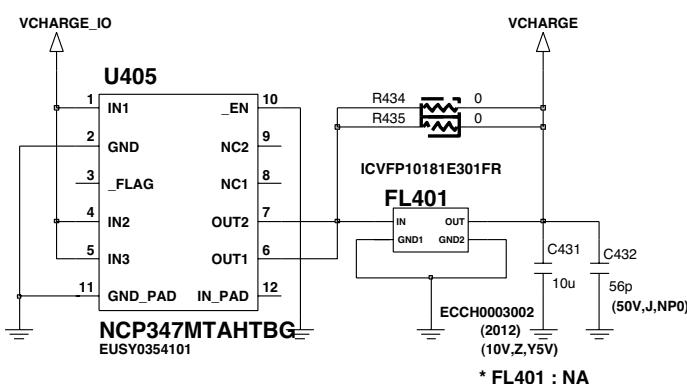
3.13 Battery Charging

The MP26021 is a linear, high-performance single cell Li-Ion battery charger.

By integrating high voltage input protection into the charger IC, the MP26021 can tolerate an input surge up to 28V

The device features constant current (CC) and constant voltage (CV) charging modes with programmable charge currents (85mA to 1A), programmable battery full threshold, thermal protection, battery temperature monitoring, reverse current blocking and trickle charge. The device also provides AC adapter power good and Charge status indications to the system.

MP26021 is available in a 10-pin 3mm x 3mm QFN package.



CHARGING IC

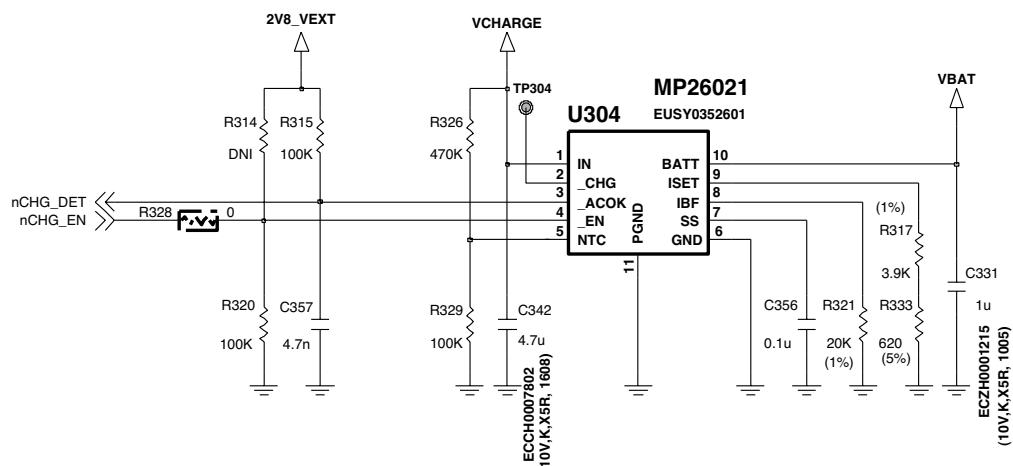


Figure 3.15 CIRCUIT FOR BATTERY CHARGING

4. TROUBLE SHOOTING

4. TROUBLE SHOOTING

4.1 RF Component

TEST POINT

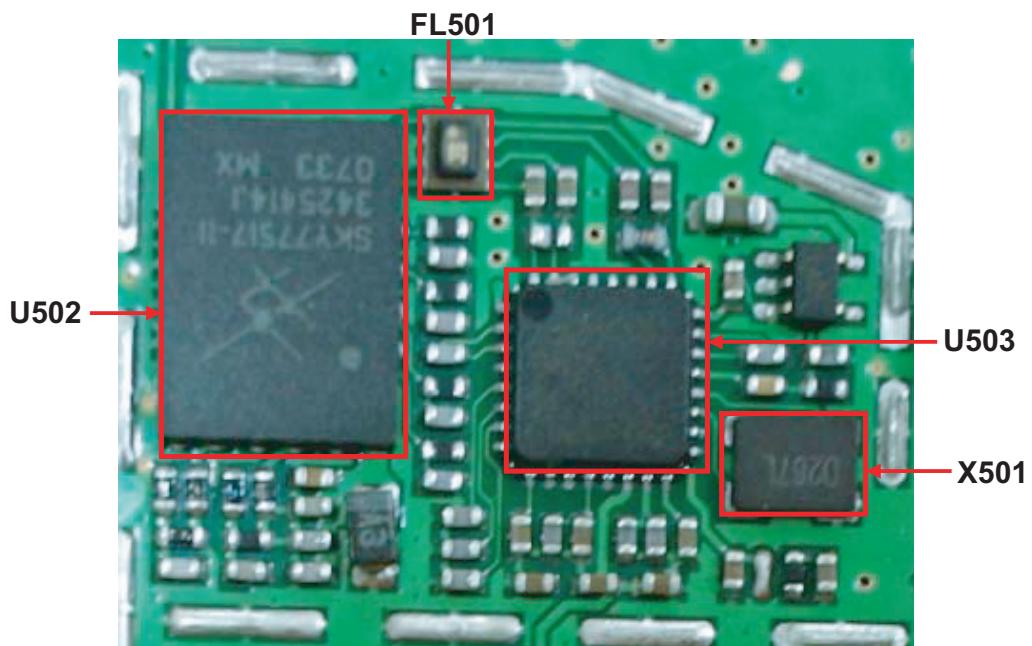
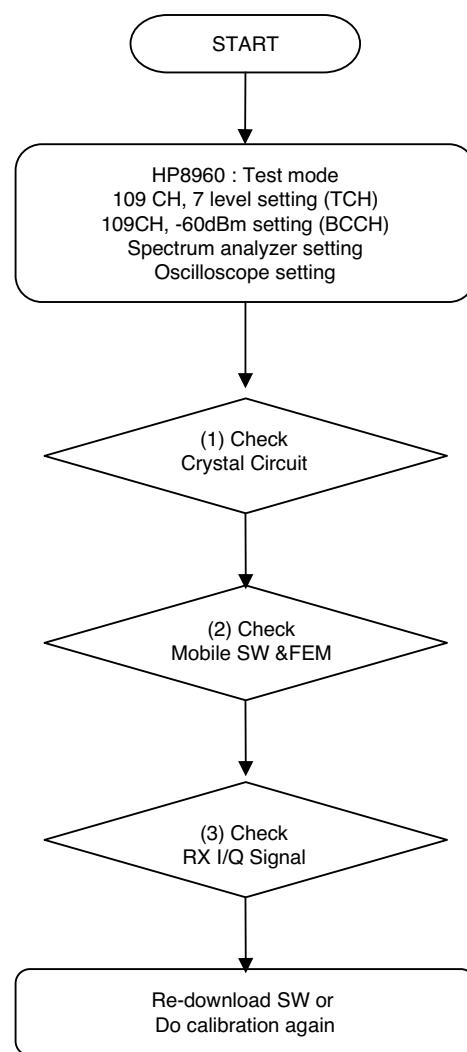


Figure 4.1

U502	Power Amp Module (SKY77518)
U503 (AD6548)	RF Main Chip (Transceiver)
X501	Crystal, 26MHz Clock
FL501	SAW FILTER, B9310

4.2 RX Trouble

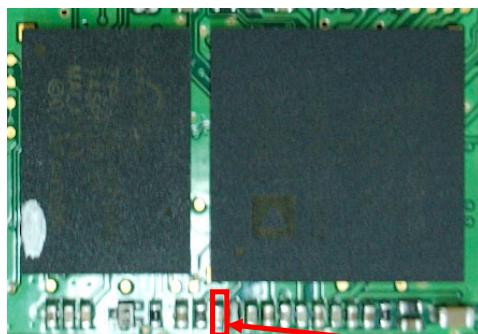
CHECKING FLOW



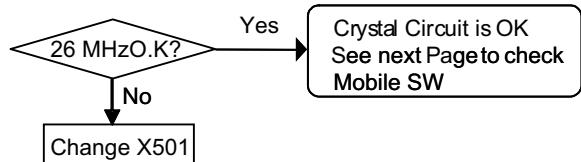
4. TROUBLE SHOOTING

(1) Checking Crystal Circuit

TEST POINT

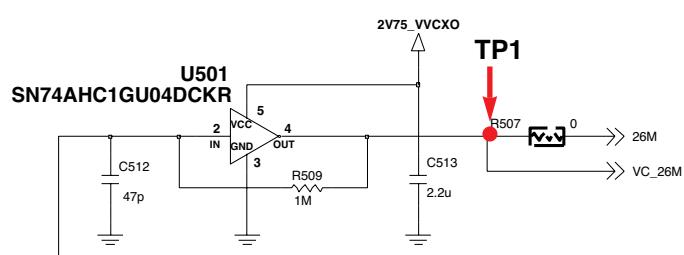


CHECKING FLOW

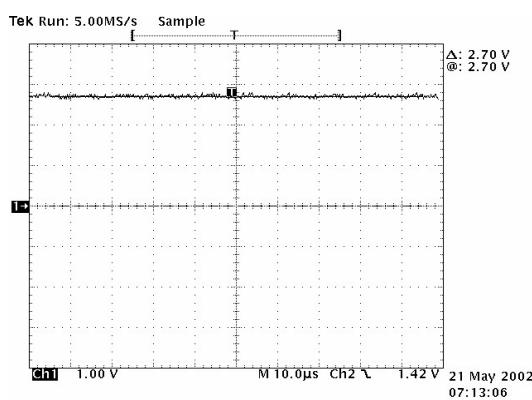


TP1

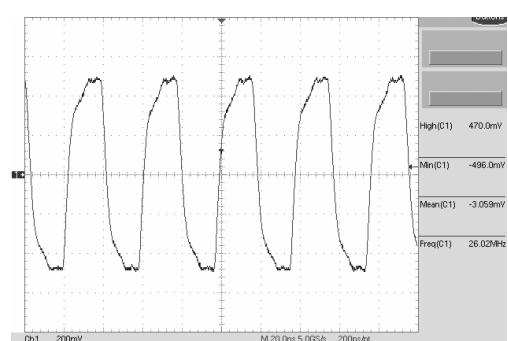
CIRCUIT



WAVEFORM



Graph 4.2.1(a)



Graph 4.2.1(b)

4. TROUBLE SHOOTING

(2) Checking RX I/Q

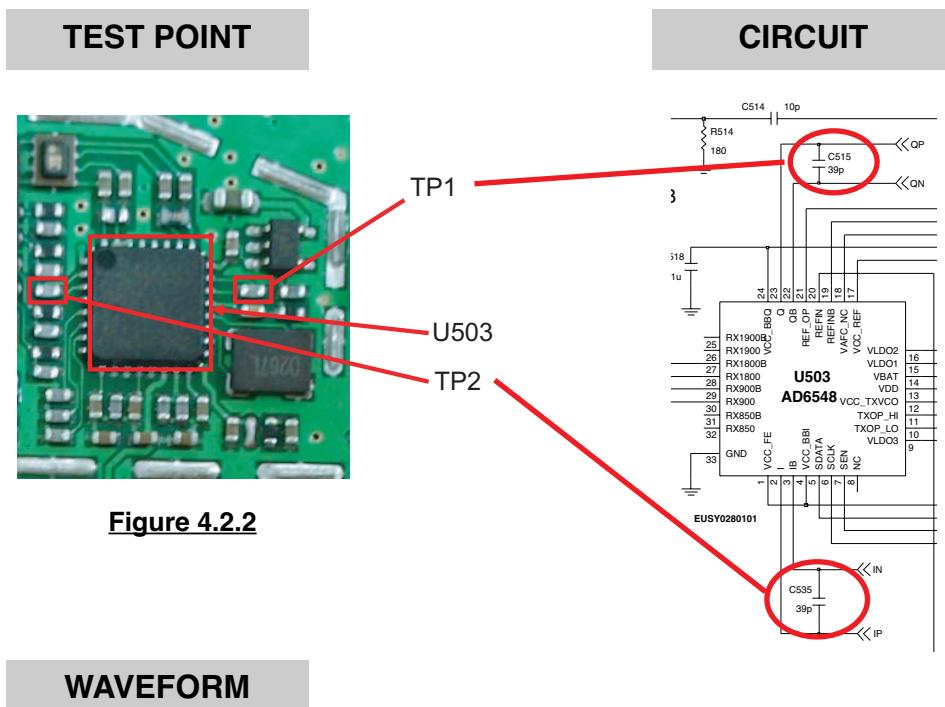
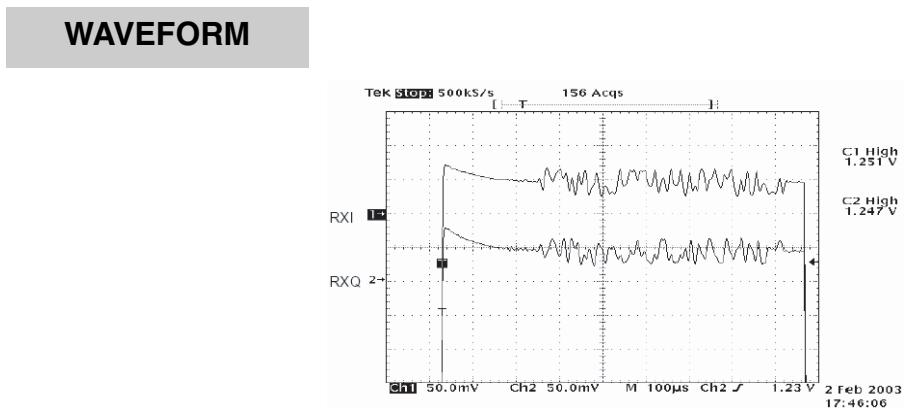


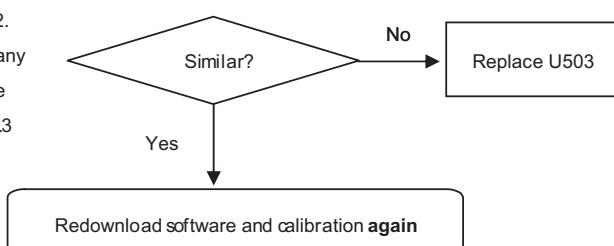
Figure 4.2.2



Graph 4.2.2

CHECKING FLOW

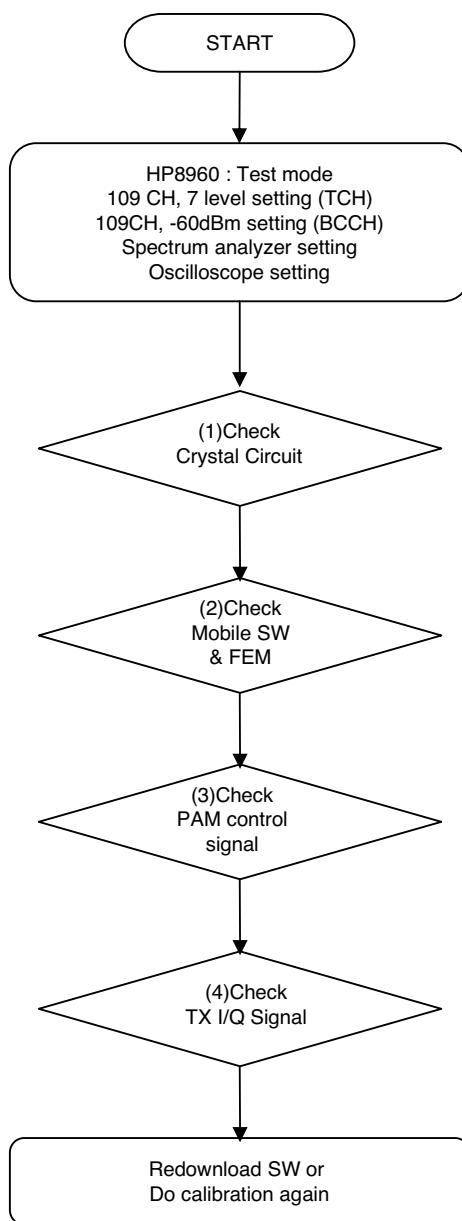
Check TP1, TP2.
Check if there is any
Major difference
Refer to graph 4.2.3



4. TROUBLE SHOOTING

4.3 TX Trouble

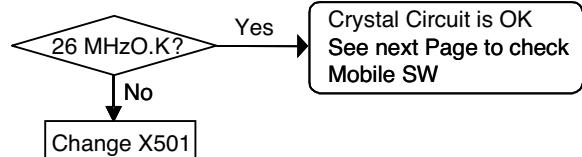
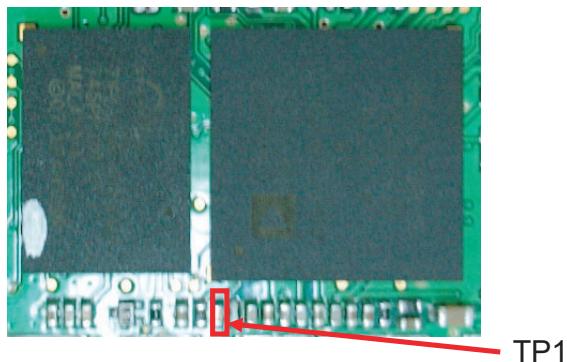
Checking Flow



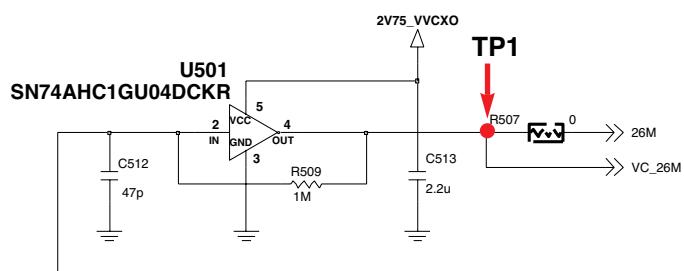
4. TROUBLE SHOOTING

(1) Checking Crystal Circuit

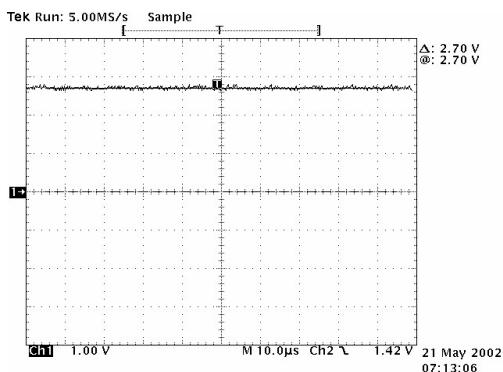
TEST POINT CHECKING FLOW



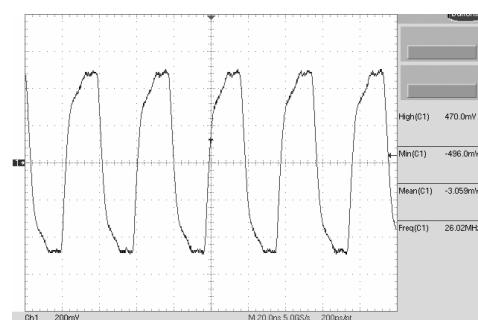
CIRCUIT



WAVEFORM



Graph 4.3.1(a)



Graph 4.3.1(b)

(2) Checking PAM Control Signal

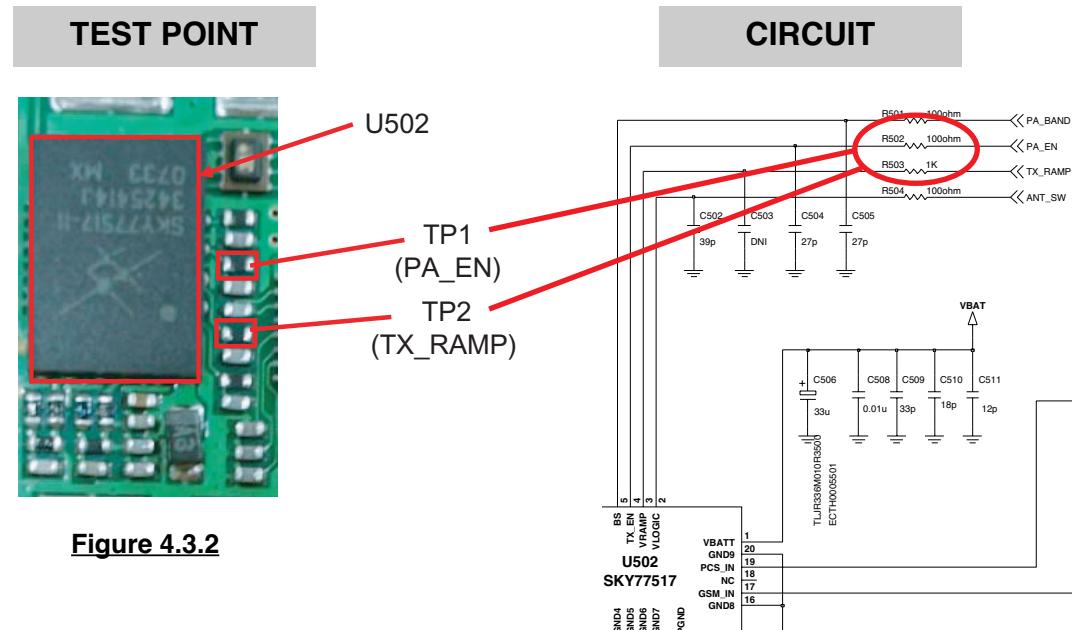
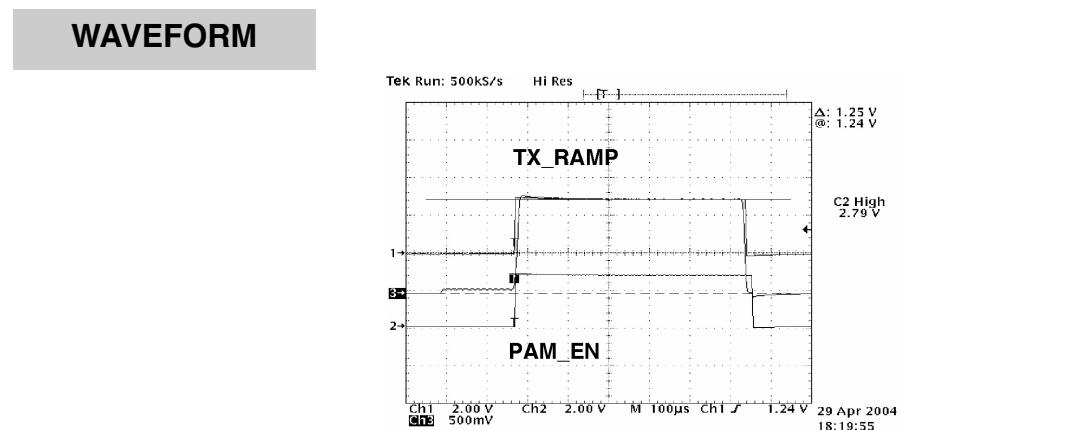
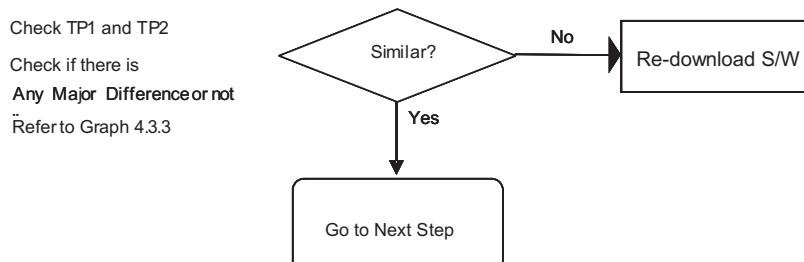


Figure 4.3.2



Graph 4.3.2

CHECKING FLOW



(3) Checking TX I/Q

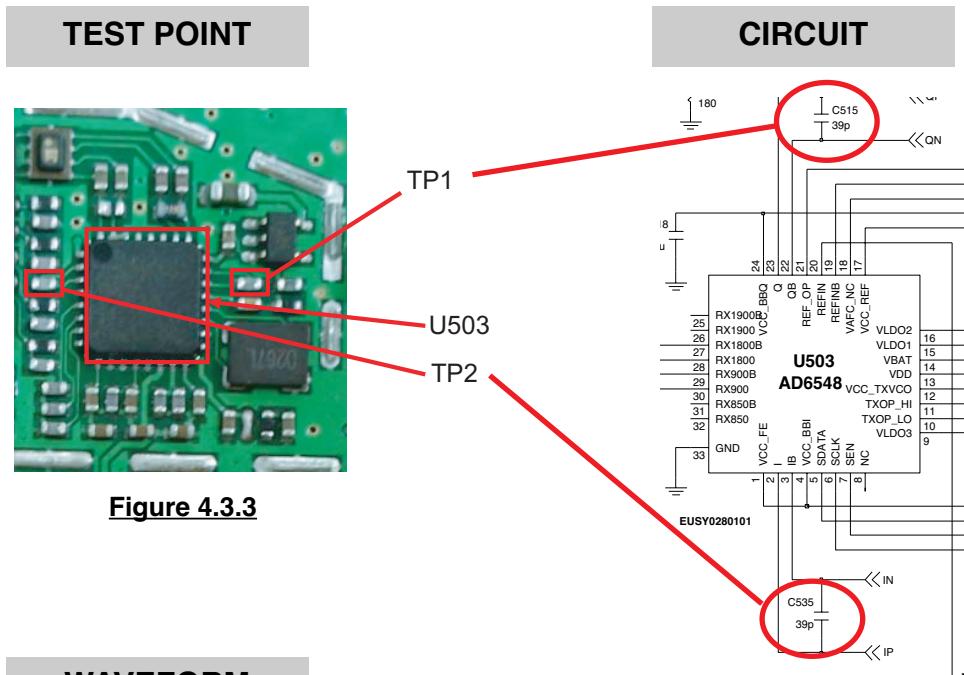
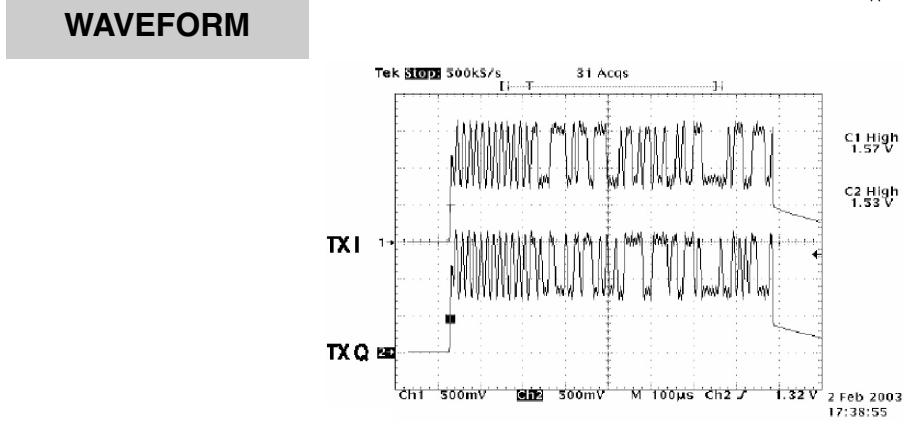
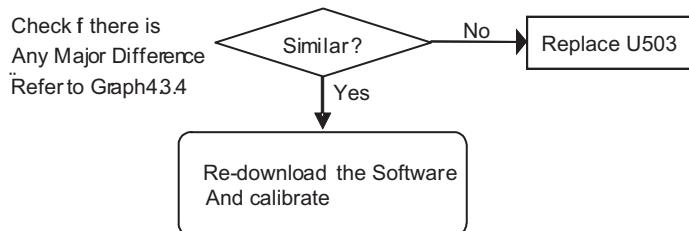


Figure 4.3.3



Graph 4.3.3

CHECKING FLOW



4. TROUBLE SHOOTING

4.4 Power On Trouble

TEST POINT

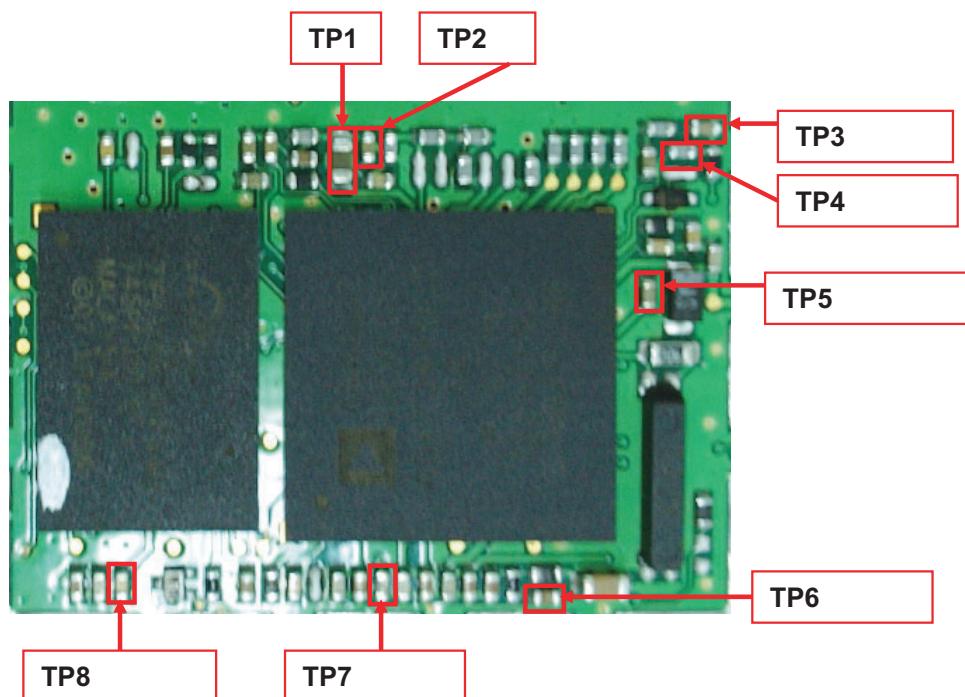
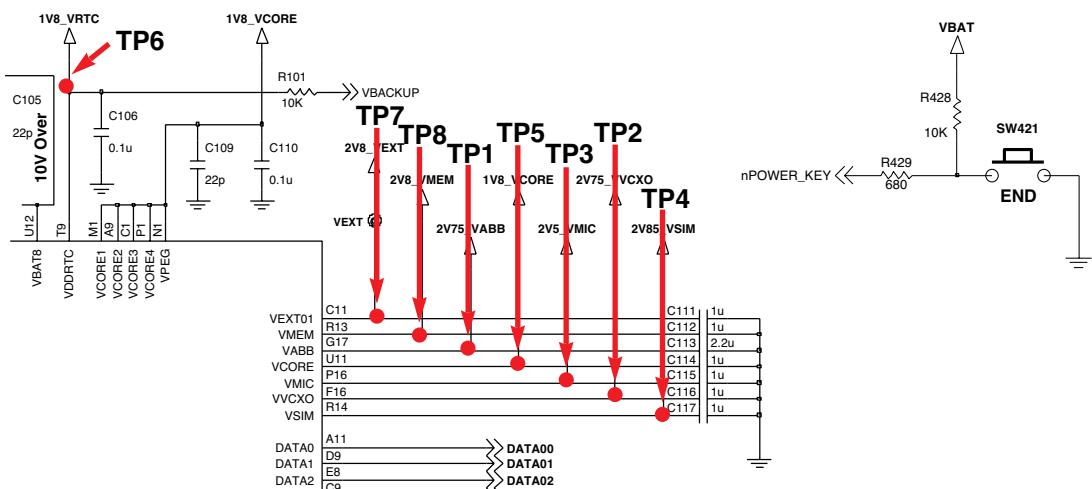
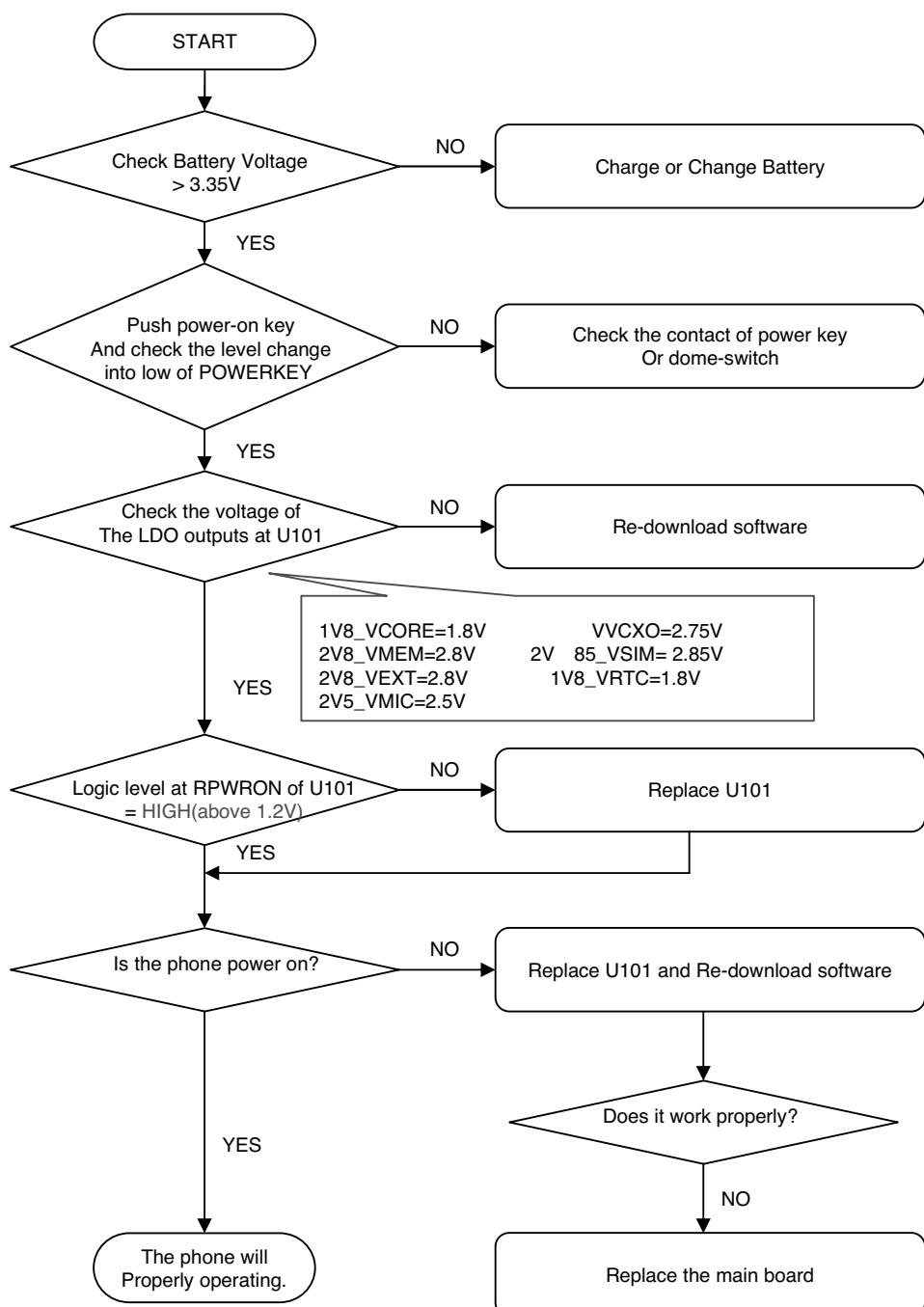


Figure 4.4

CIRCUIT



Checking Flow



4. TROUBLE SHOOTING

4.5 Charging Trouble

TEST POINT

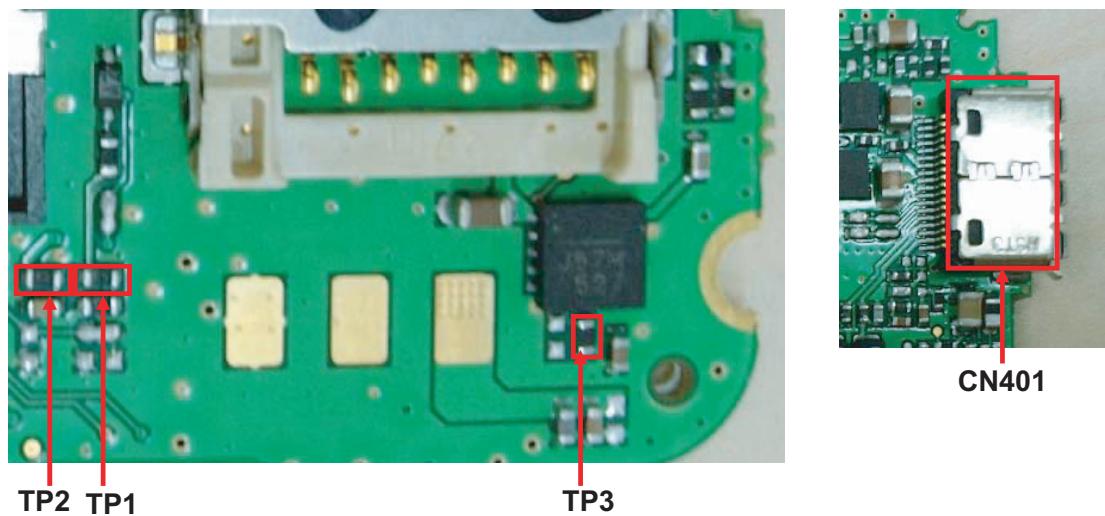
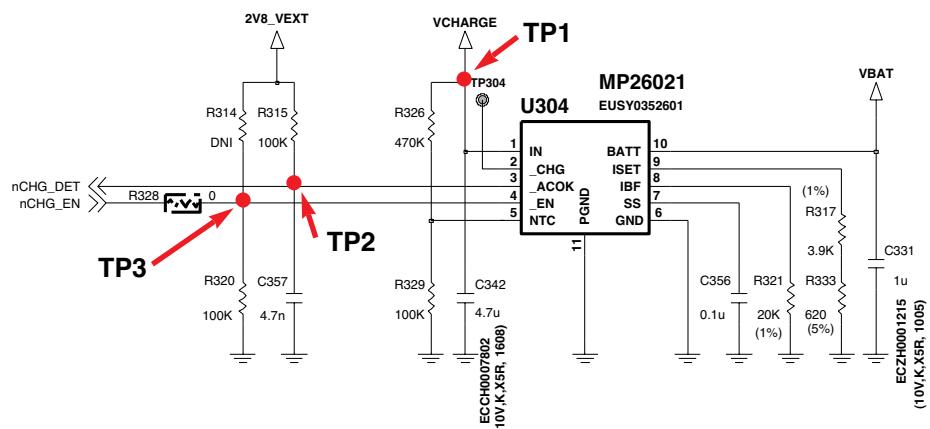


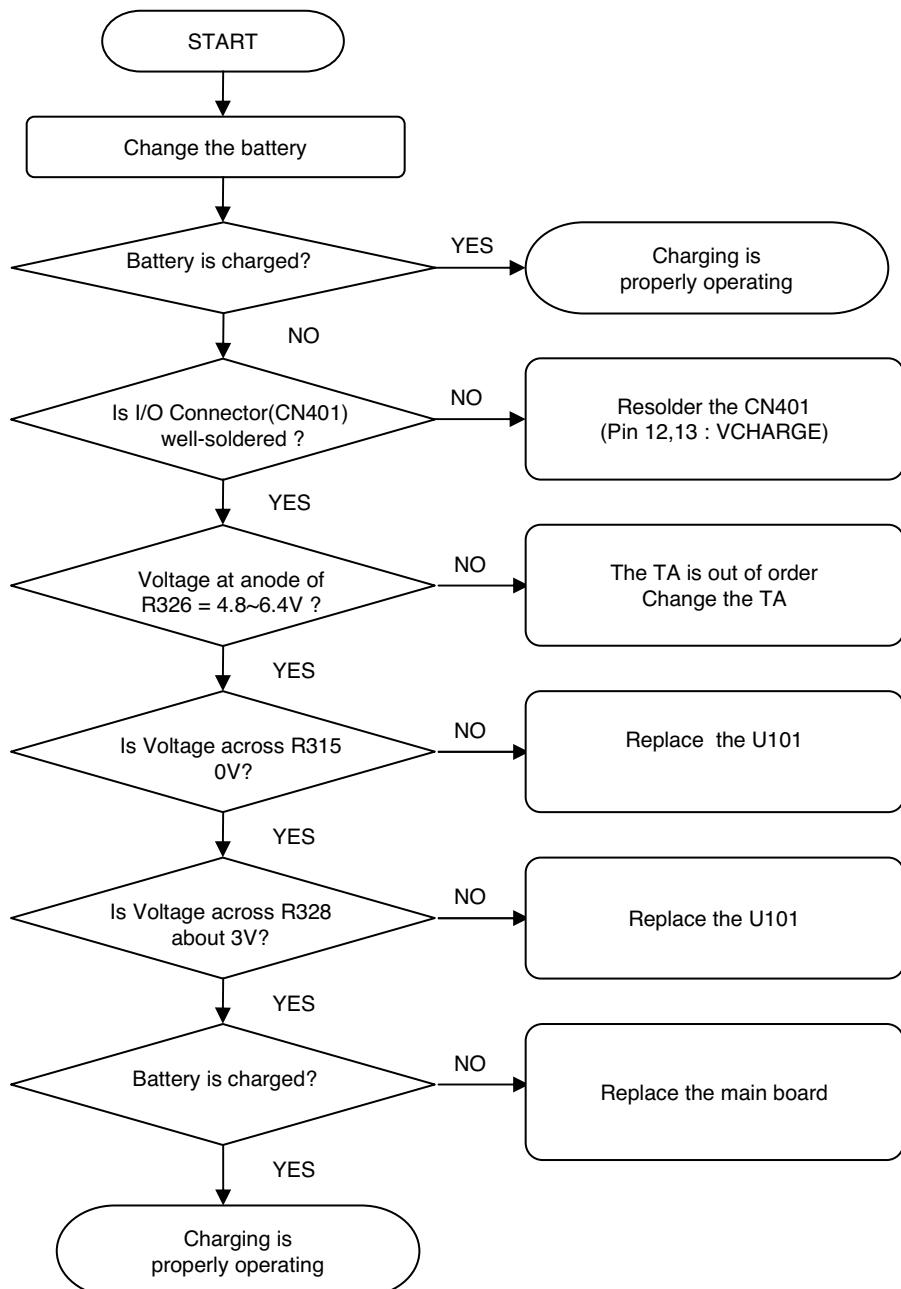
Figure 4.5

CIRCUIT

CHARGING IC



Checking Flow



4. TROUBLE SHOOTING

4.6 Vibrator Trouble

TEST POINT

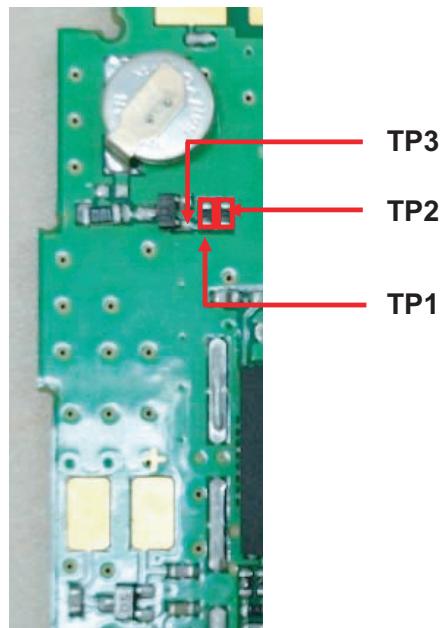
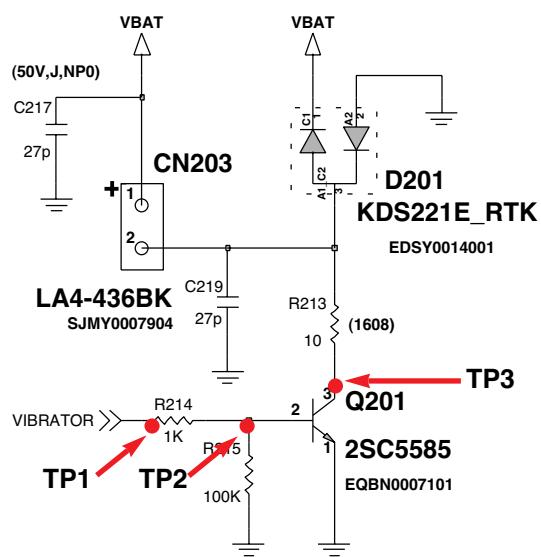


Figure 4.6

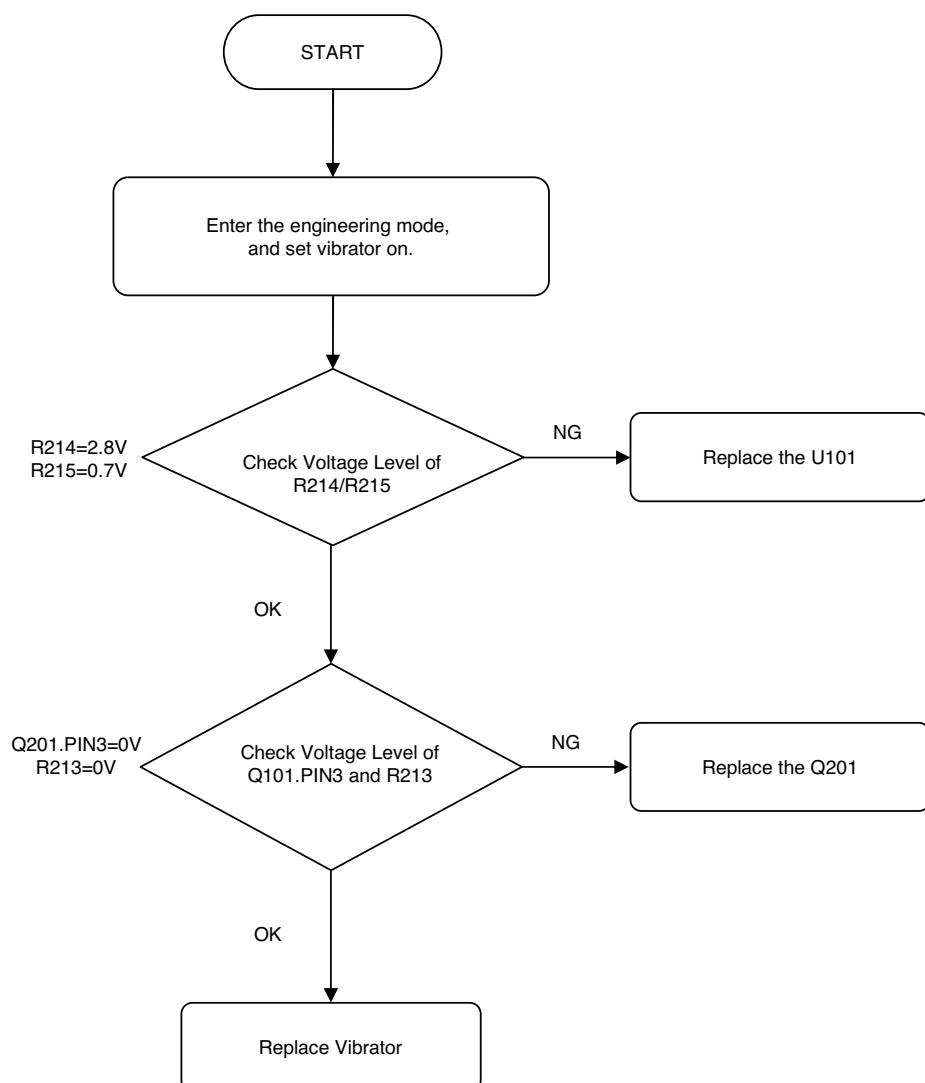
CIRCUIT

VIBRATOR



Checking Flow

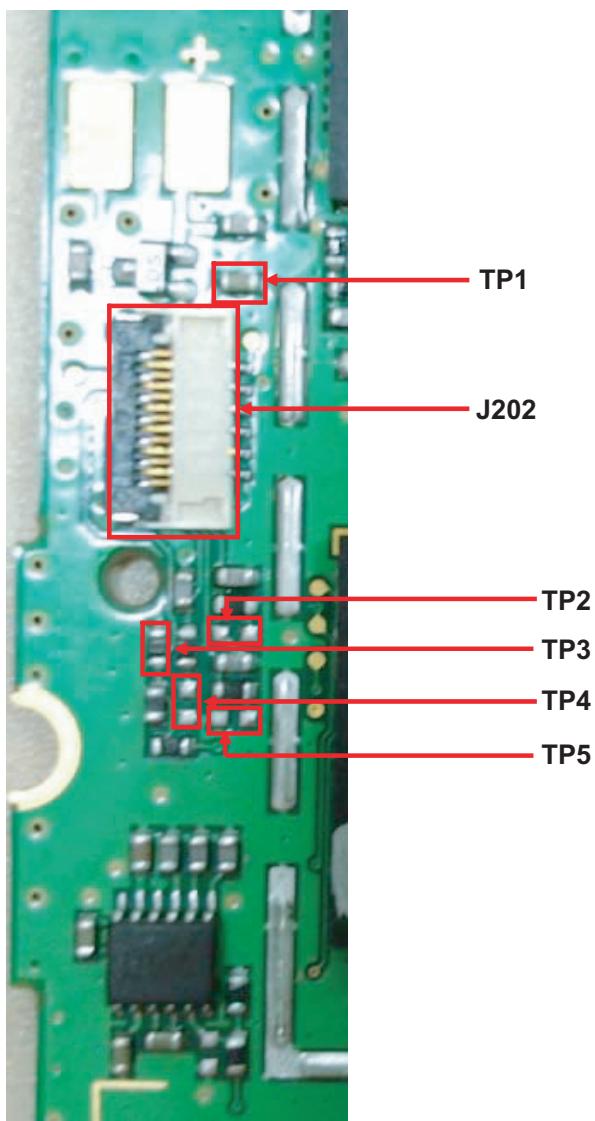
SETTING : Enter the engineering mode, and set vibrator on at vibration of BB test menu



4. TROUBLE SHOOTING

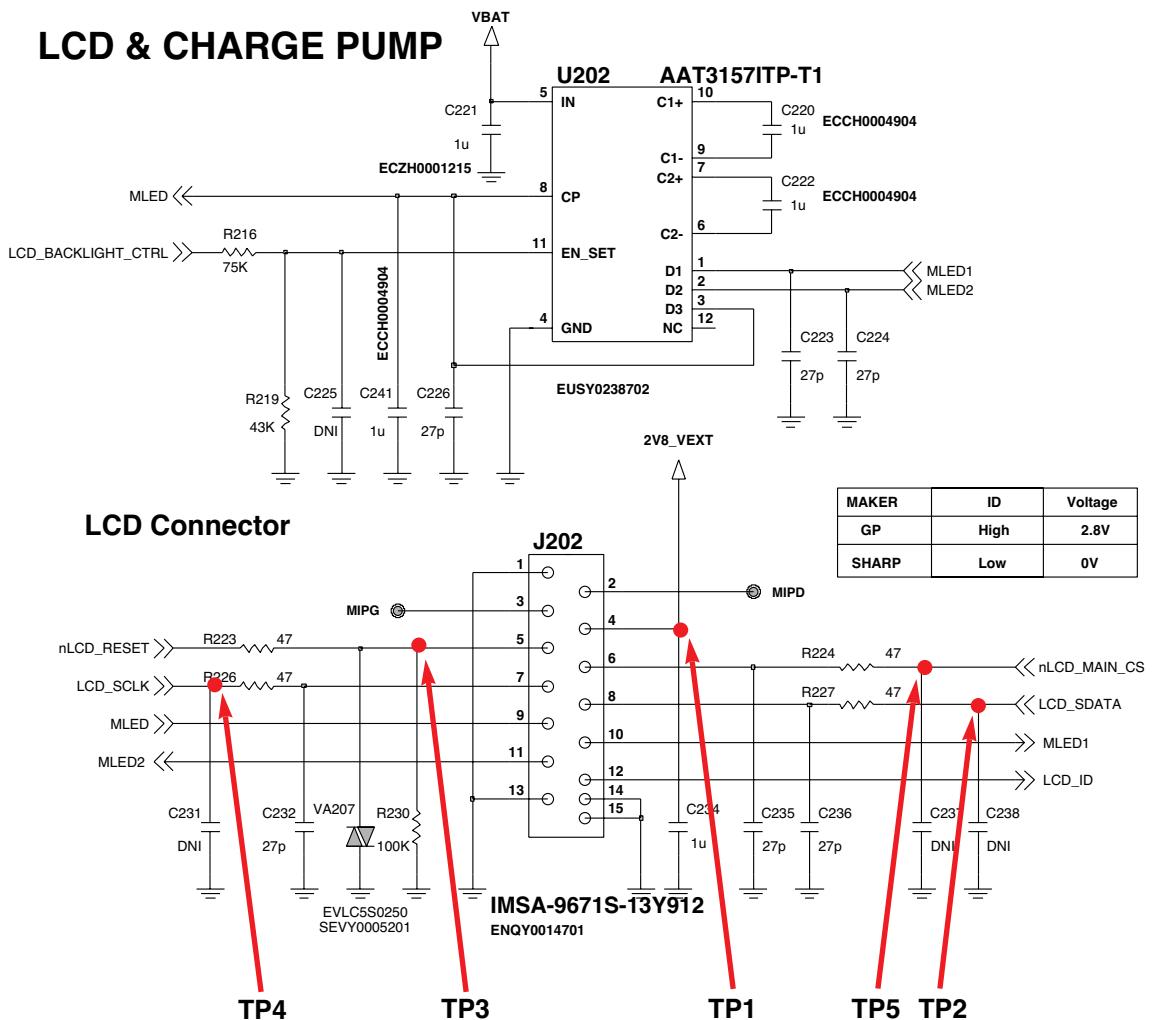
4.7 LCD Trouble

TEST POINT



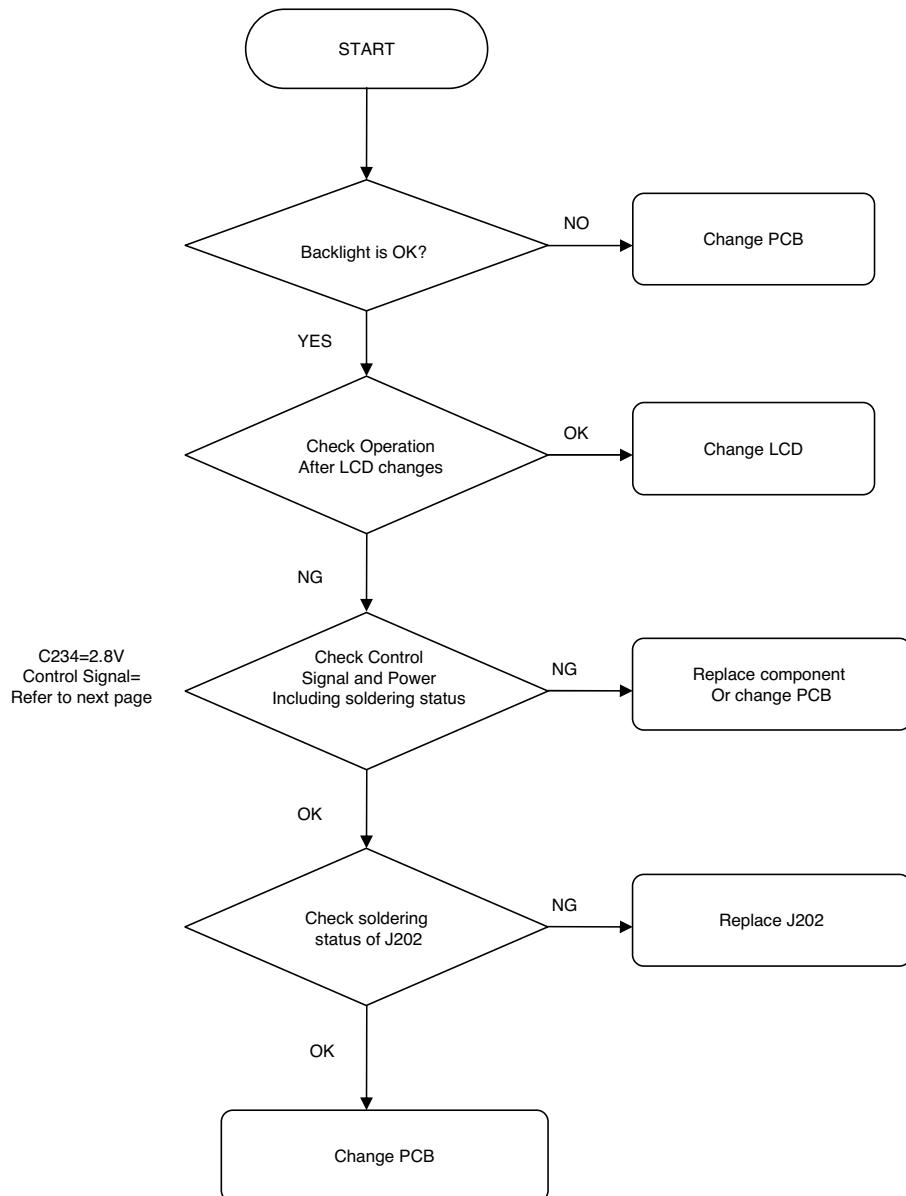
LCD Trouble

CIRCUIT



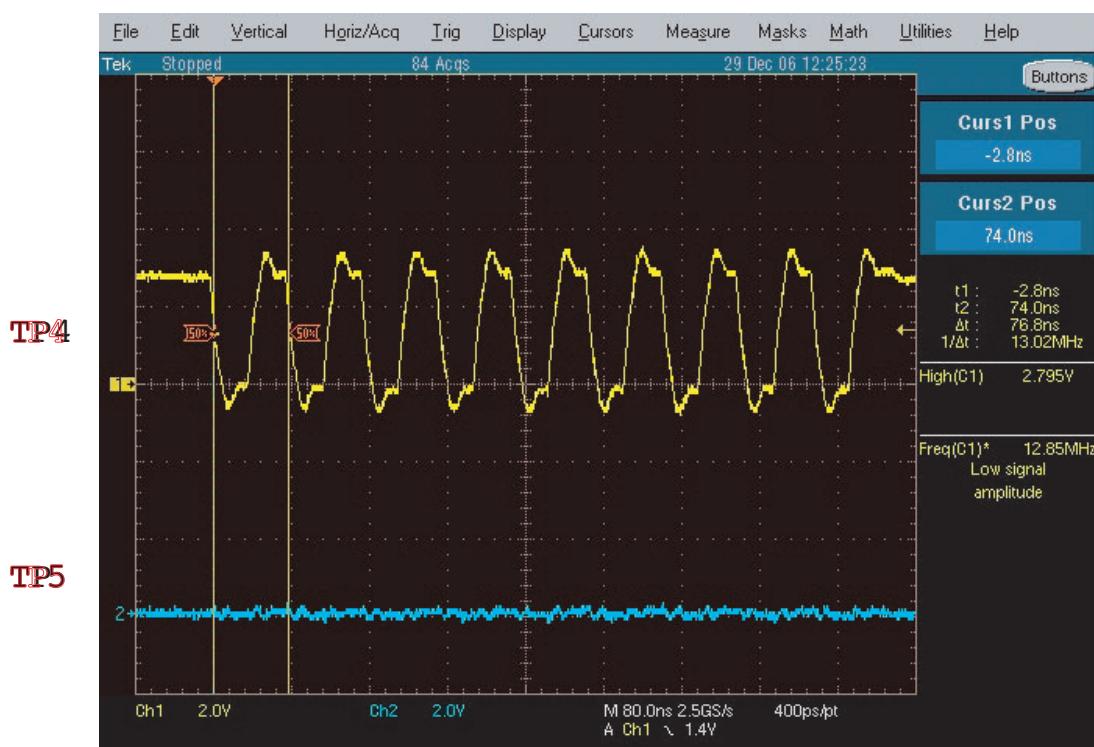
4. TROUBLE SHOOTING

CHECKING FLOW



LCD Trouble

WAVEFORM

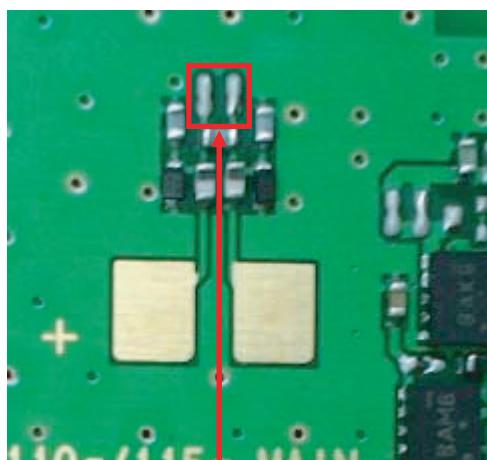


→ LCD_SDATA pattern is out randomly when clock is fluctiated.
, clock frequency is 13MHz and nLCD_RESET is High(2.8V).

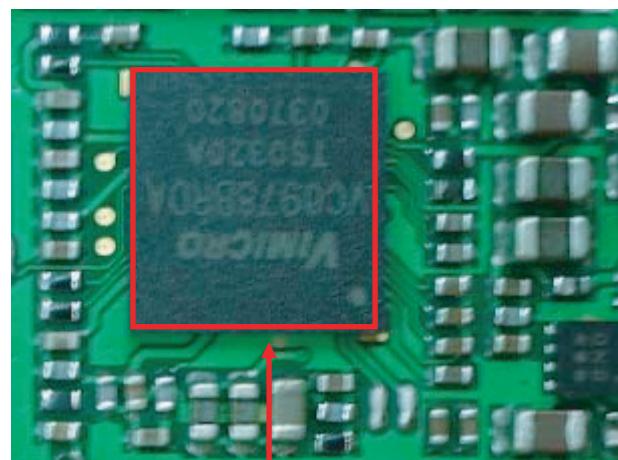
4. TROUBLE SHOOTING

4.8 Speaker Trouble

TEST POINT



TP1,TP2

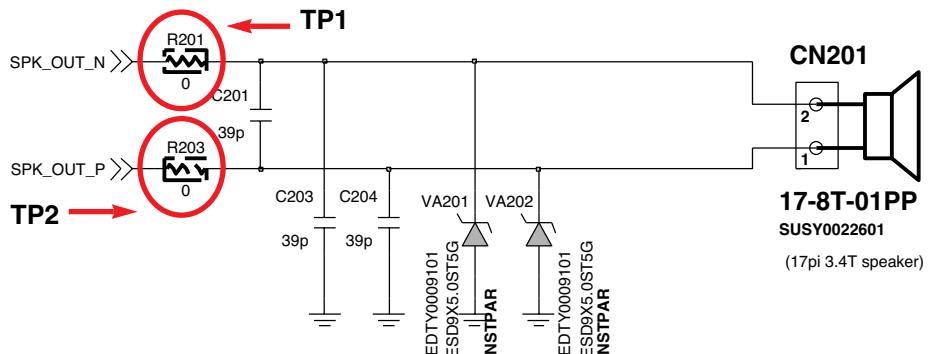


U305

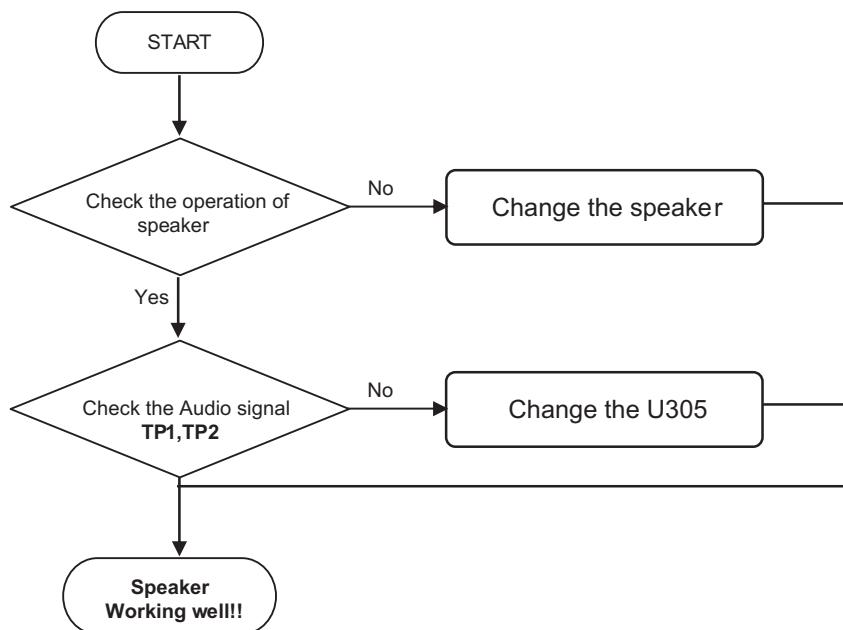
Figure 4.8

CIRCUIT

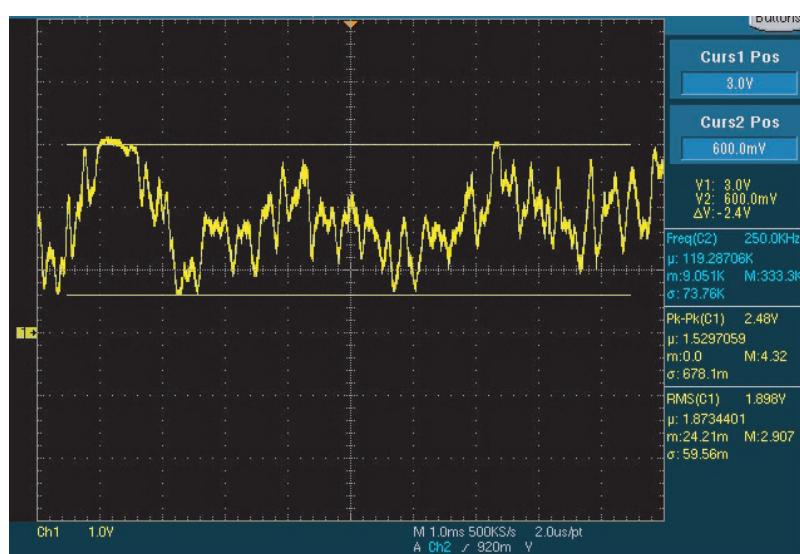
SPEAKER



CHECKING FLOW



WAVEFORM



4. TROUBLE SHOOTING

4.9 SIM Card Interface Trouble

TEST POINT

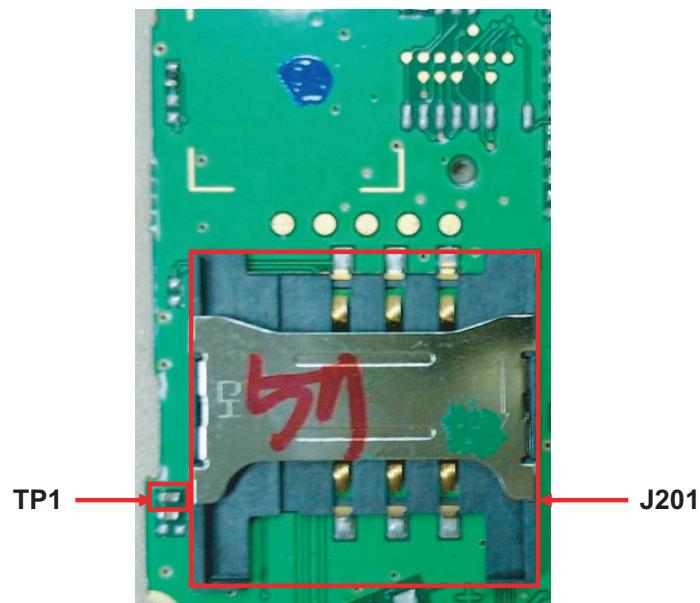
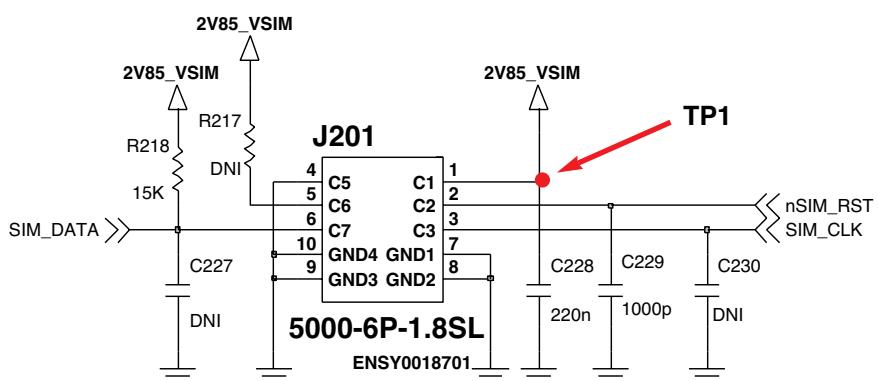


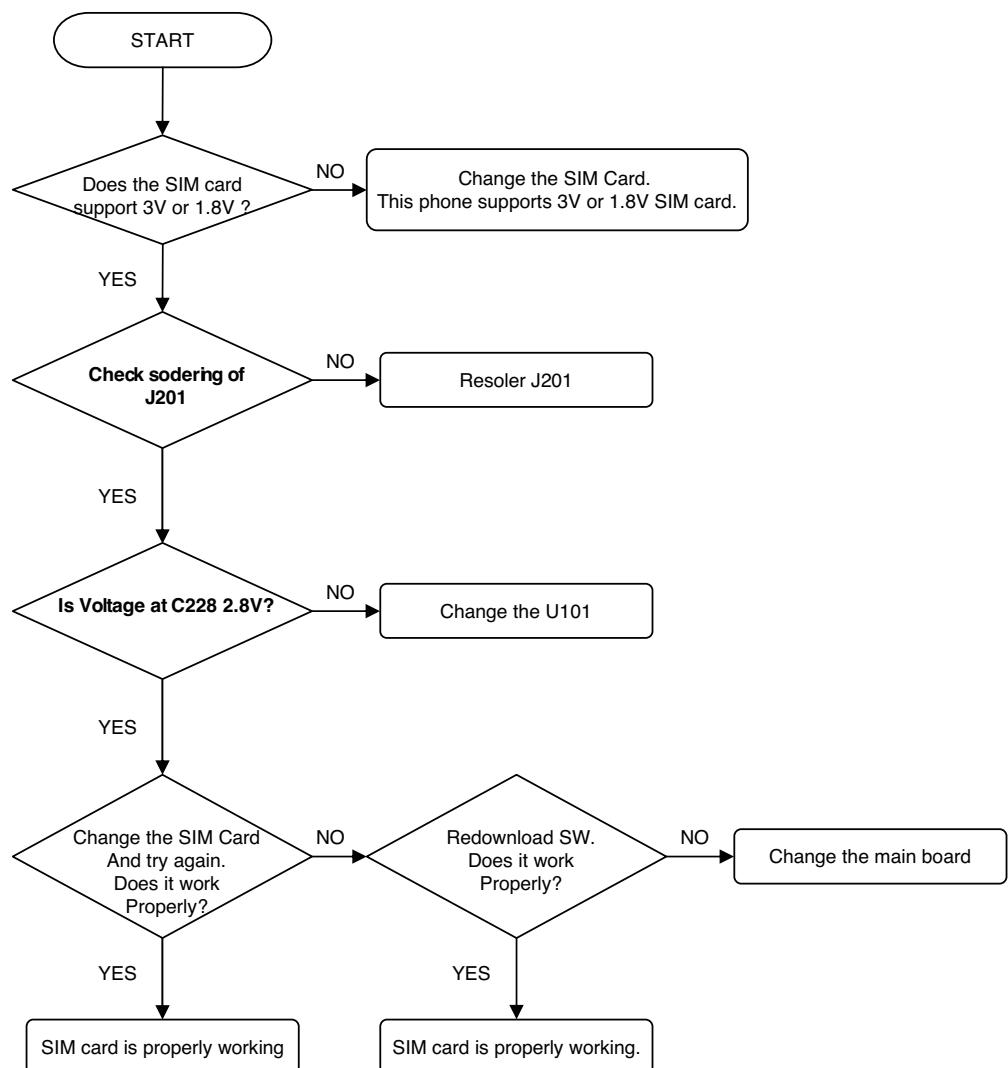
Figure 4.9

CIRCUIT

SIM SOCKET



CHECKING FLOW



4. TROUBLE SHOOTING

4.10 Earphone Trouble

TEST POINT

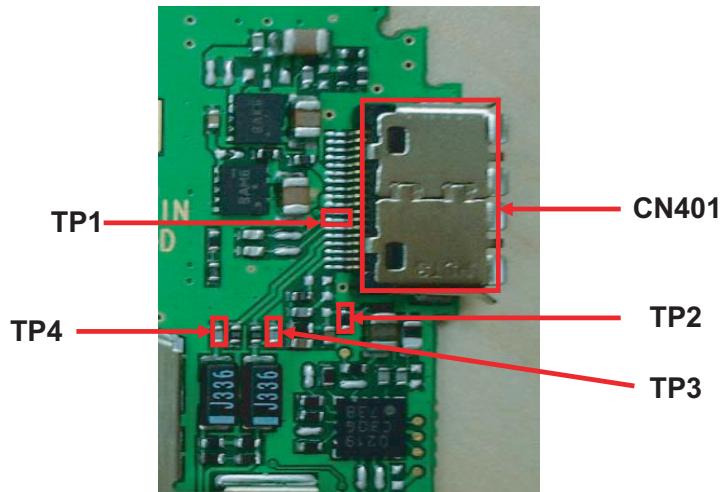
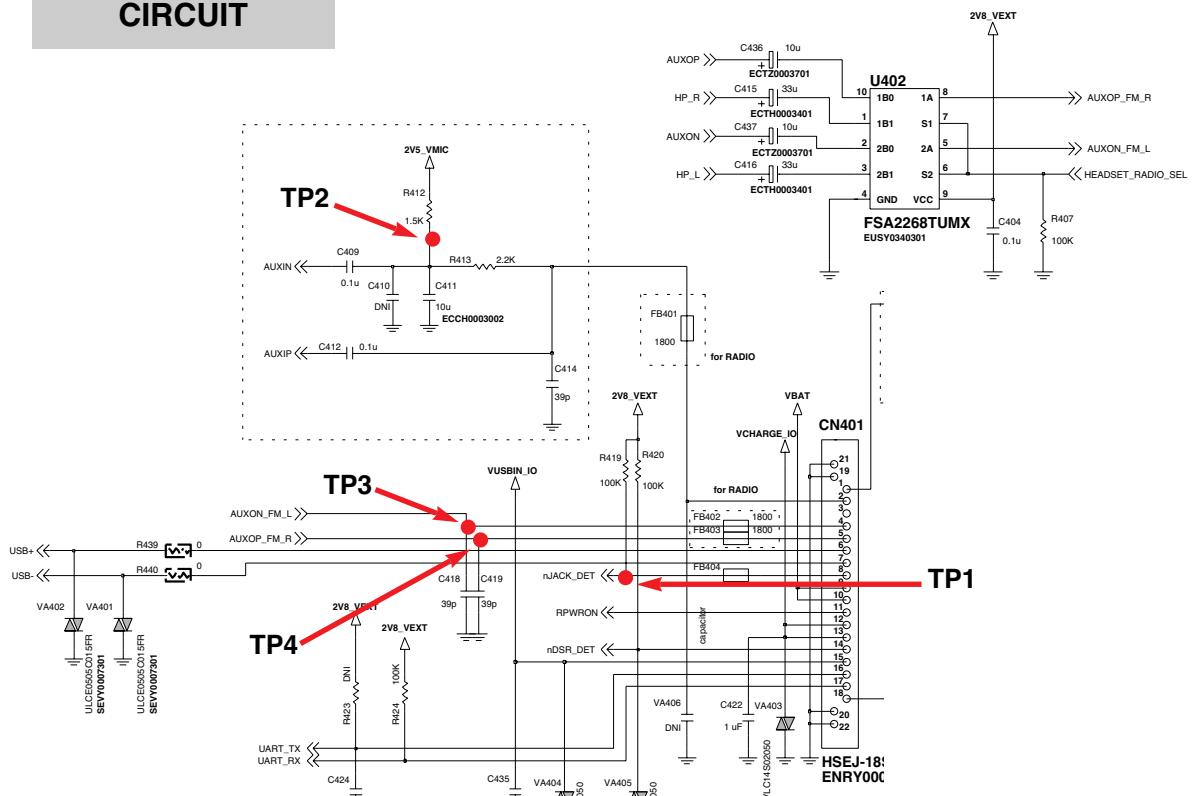


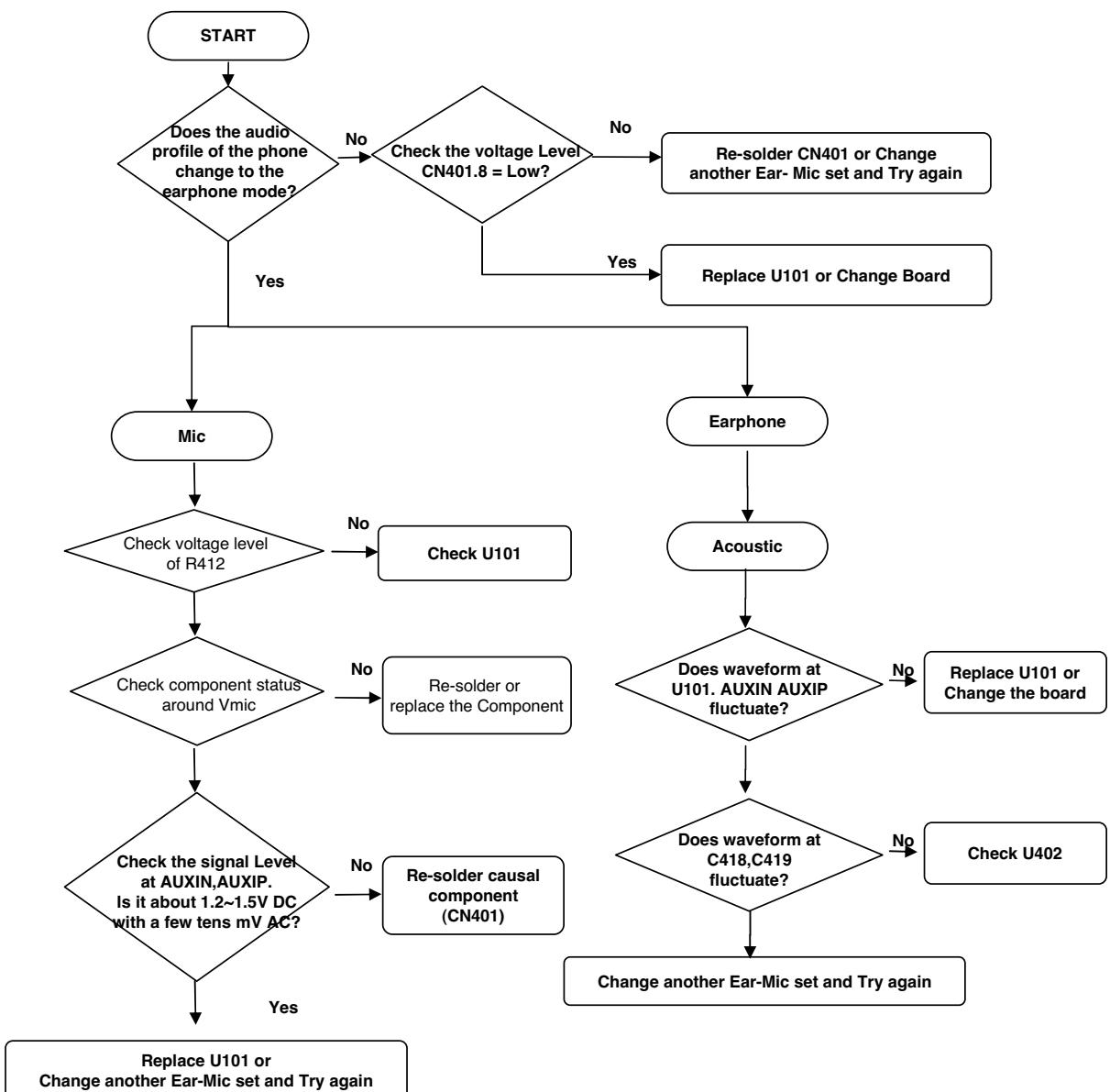
Figure 4.10

CIRCUIT



4. TROUBLE SHOOTING

CHECKING FLOW



4. TROUBLE SHOOTING

4.11 KEY backlight Trouble

TEST POINT

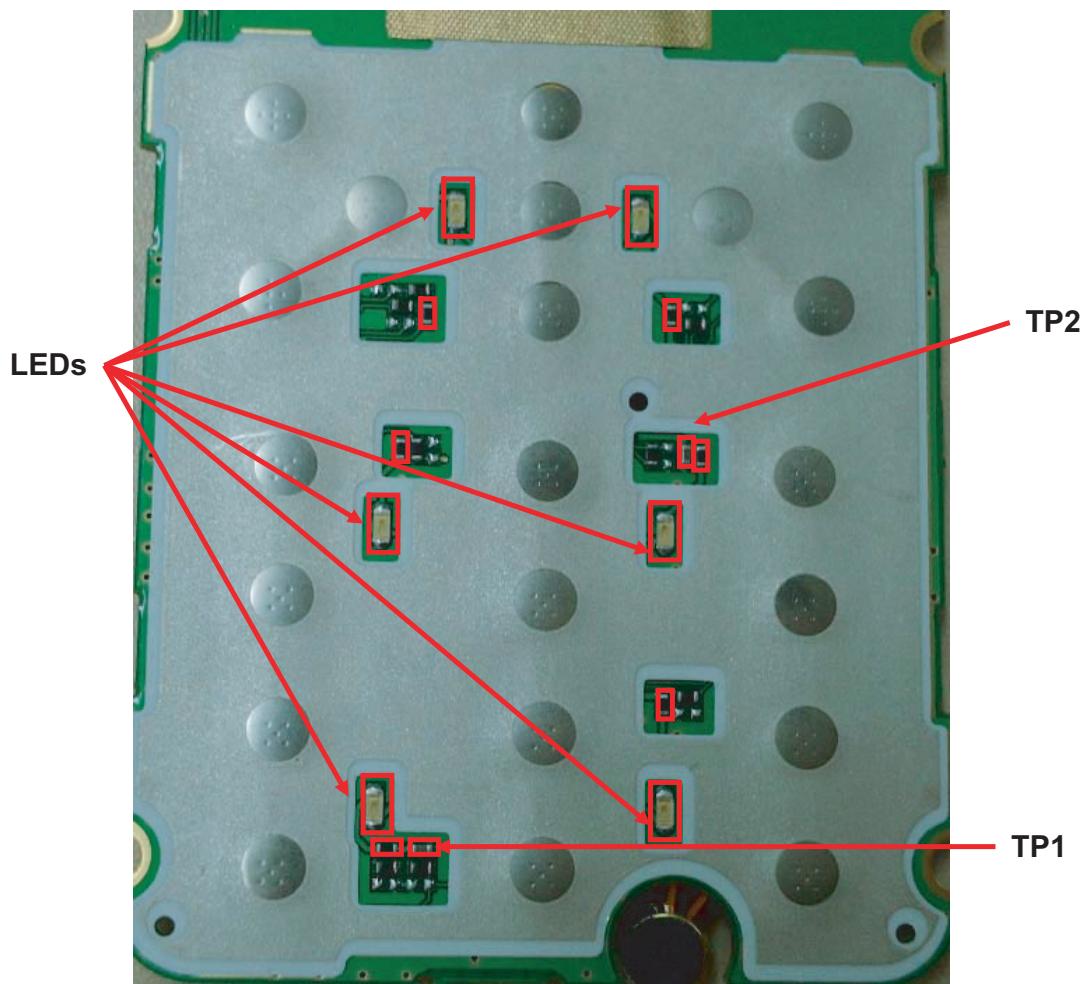
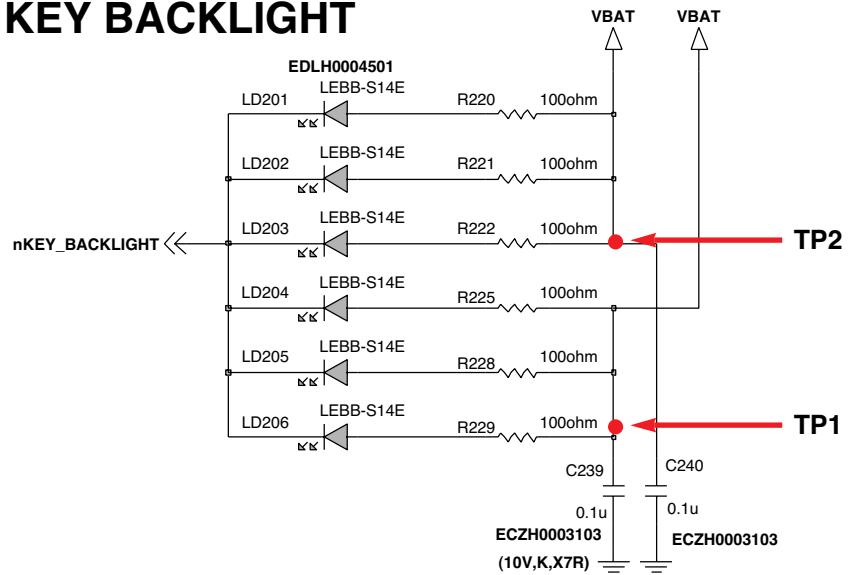


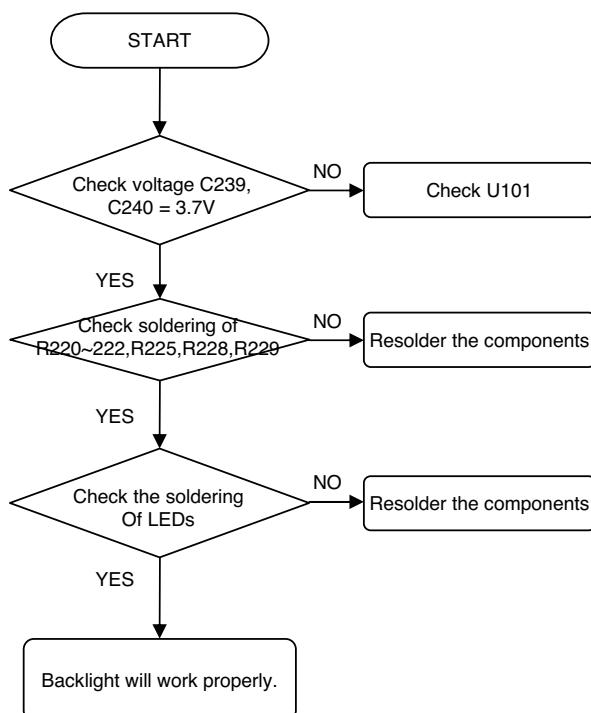
Figure 4.11

CIRCUIT

KEY BACKLIGHT



CHECKING FLOW



4. TROUBLE SHOOTING

4.12 Receiver Trouble

TEST POINT

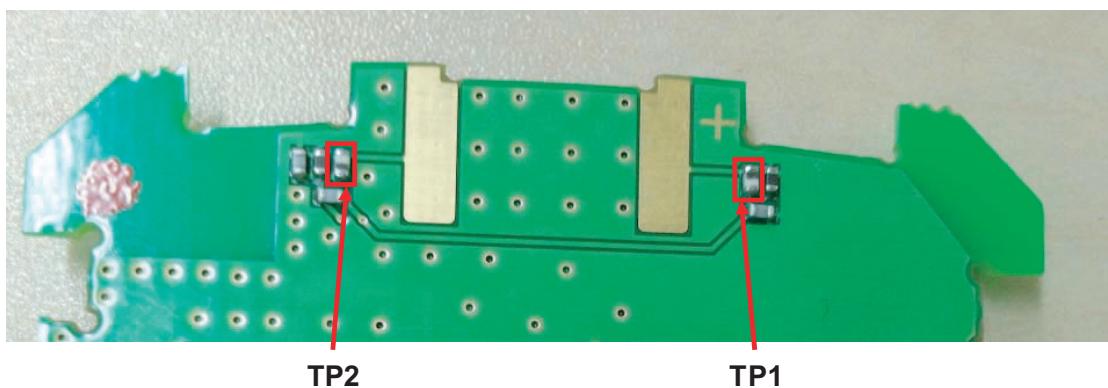
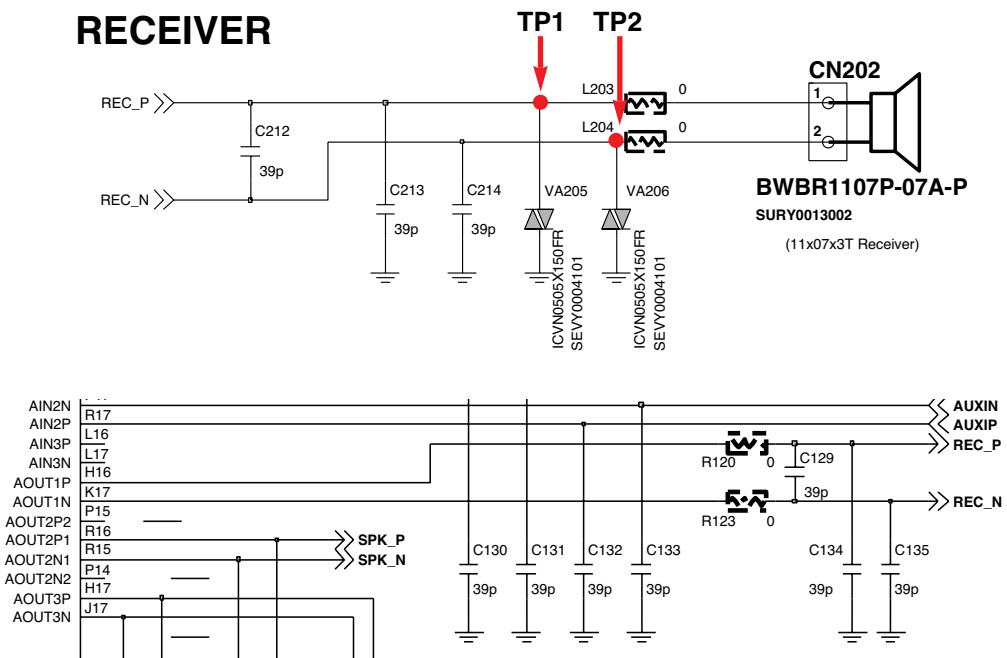


Figure 4.12

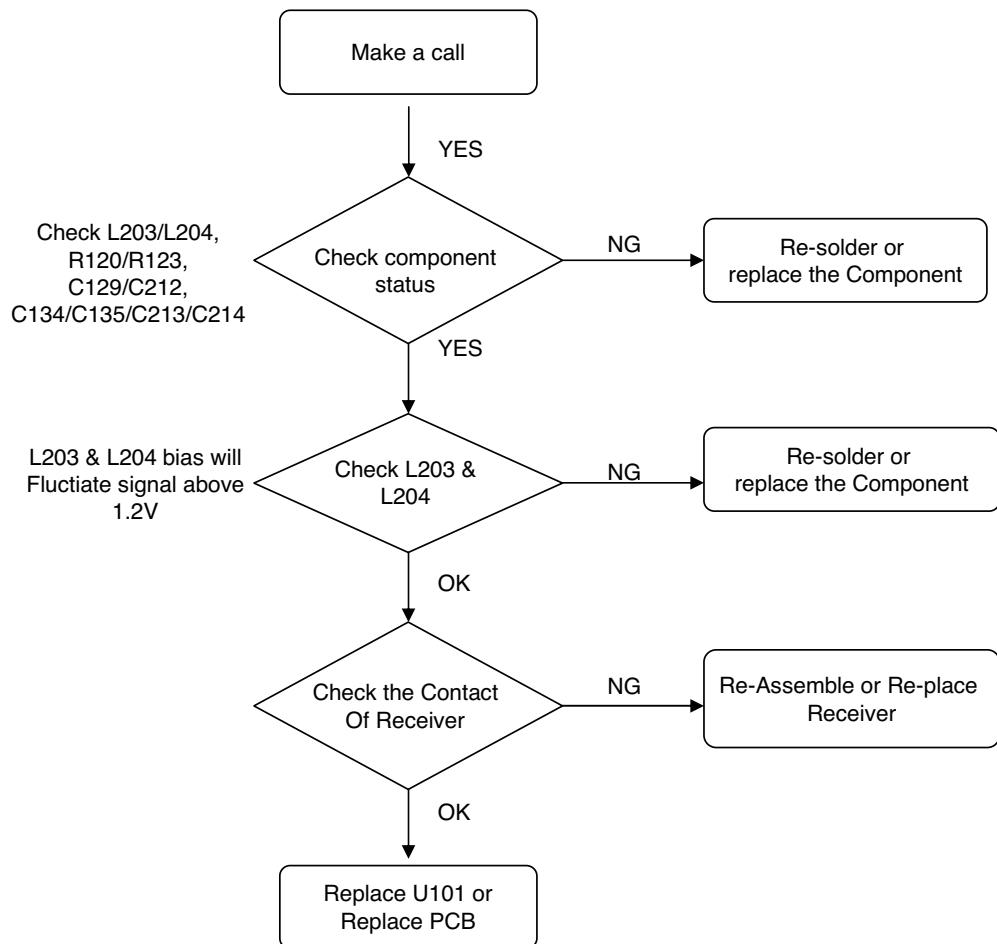
CIRCUIT



4. TROUBLE SHOOTING

CHECKING FLOW

SETTING : After initialize Agilent 8960, Test GSM900, DCS mode
Set the property of audio as PRBS or continuous wave. Set the receiving volume of mobile as Max.



4. TROUBLE SHOOTING

4.13 Microphone Trouble

TEST POINT

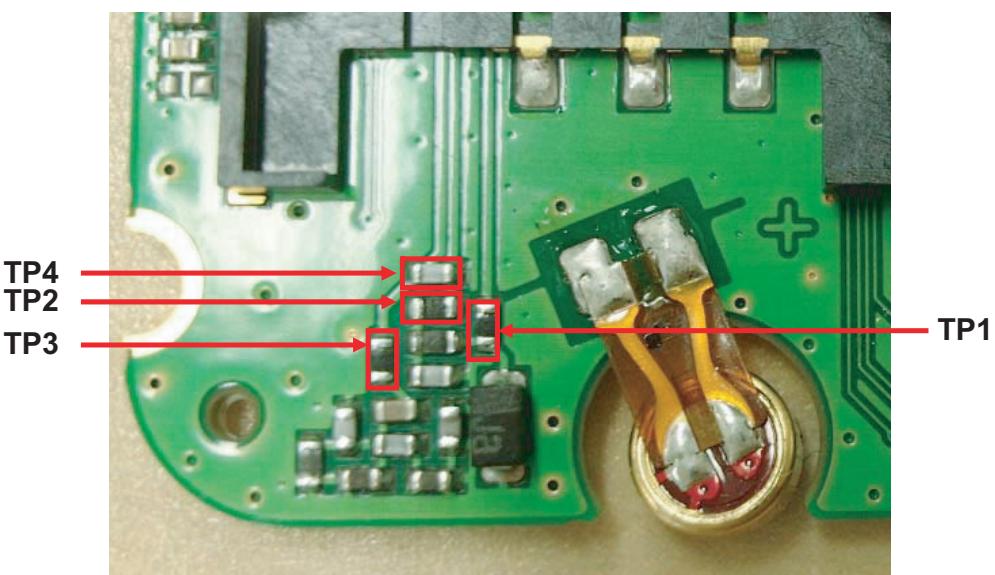
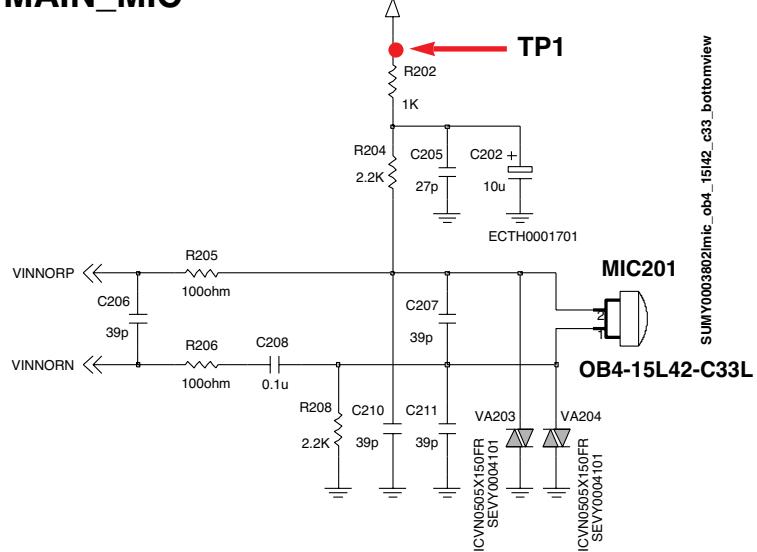


Figure 4.13

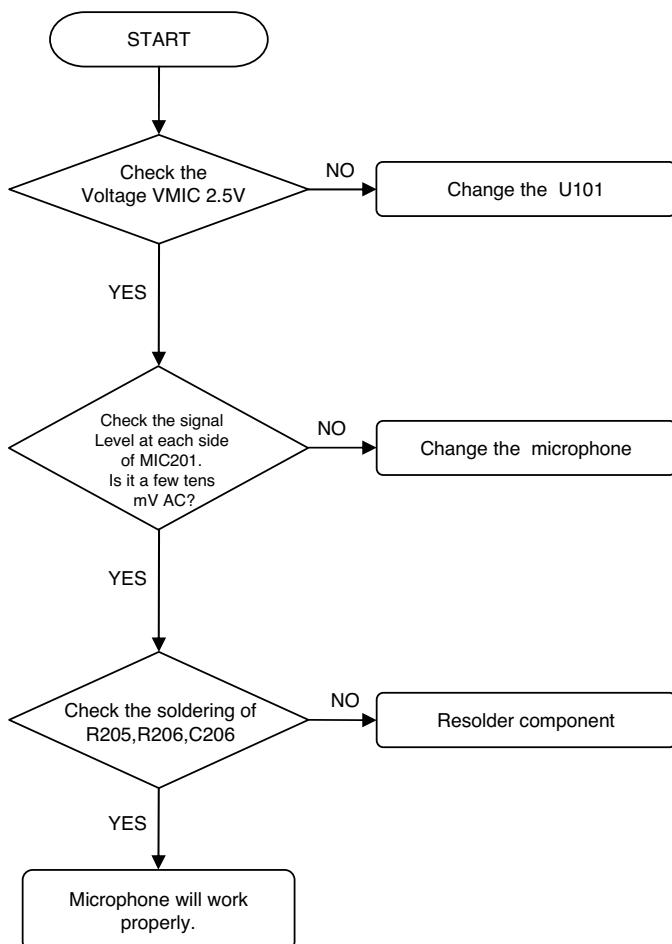
CIRCUIT

MAIN_MIC



CHECKING FLOW

SETTING : After initialize Agilent 8960, Test GSM900, DCS mode



4. TROUBLE SHOOTING

4.14 RTC Trouble

TEST POINT

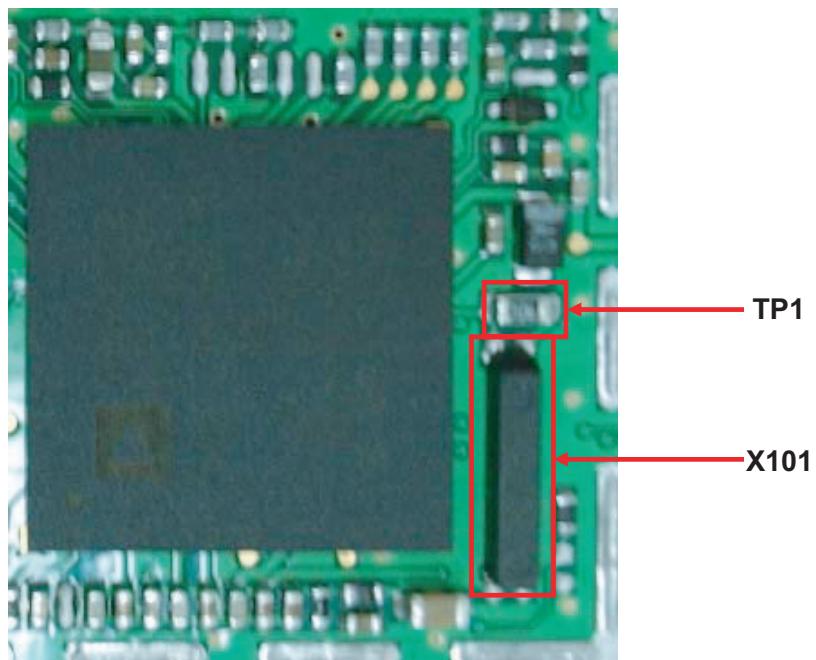
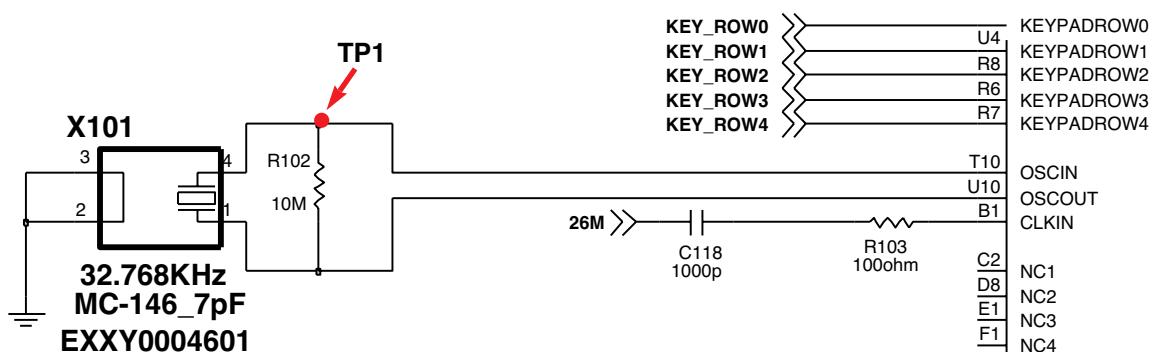
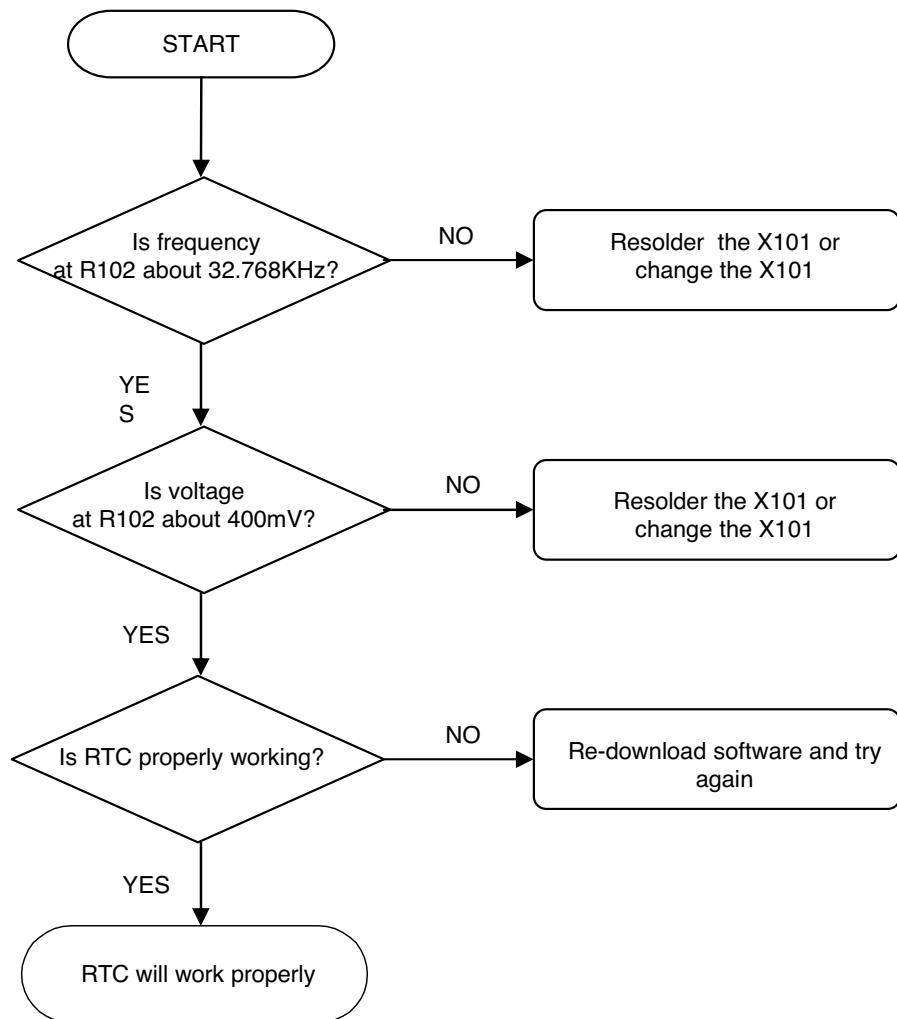


Figure 4.14

CIRCUIT



CHECKING FLOW



4.15 FM Radio Trouble

TEST POINT

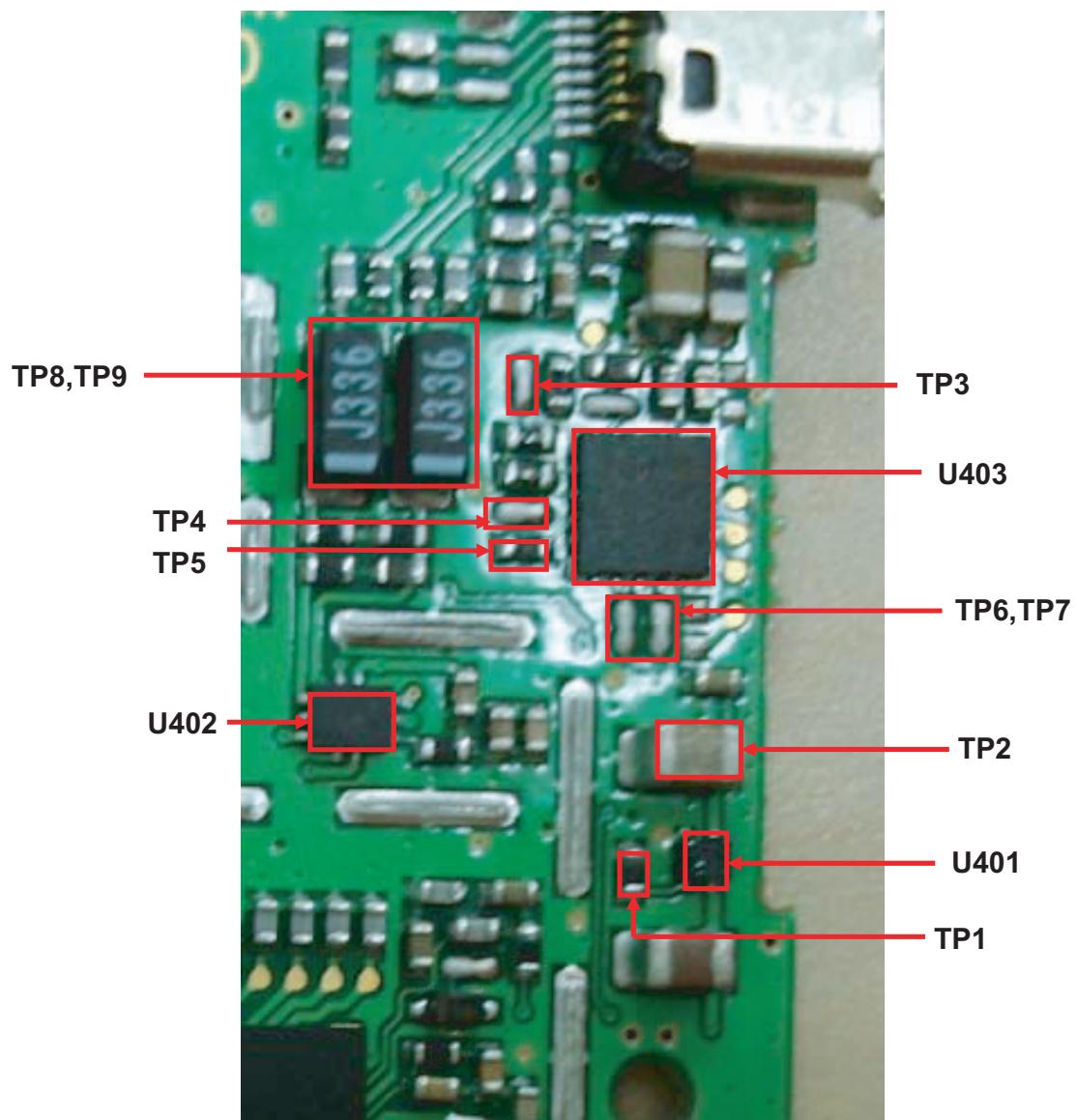
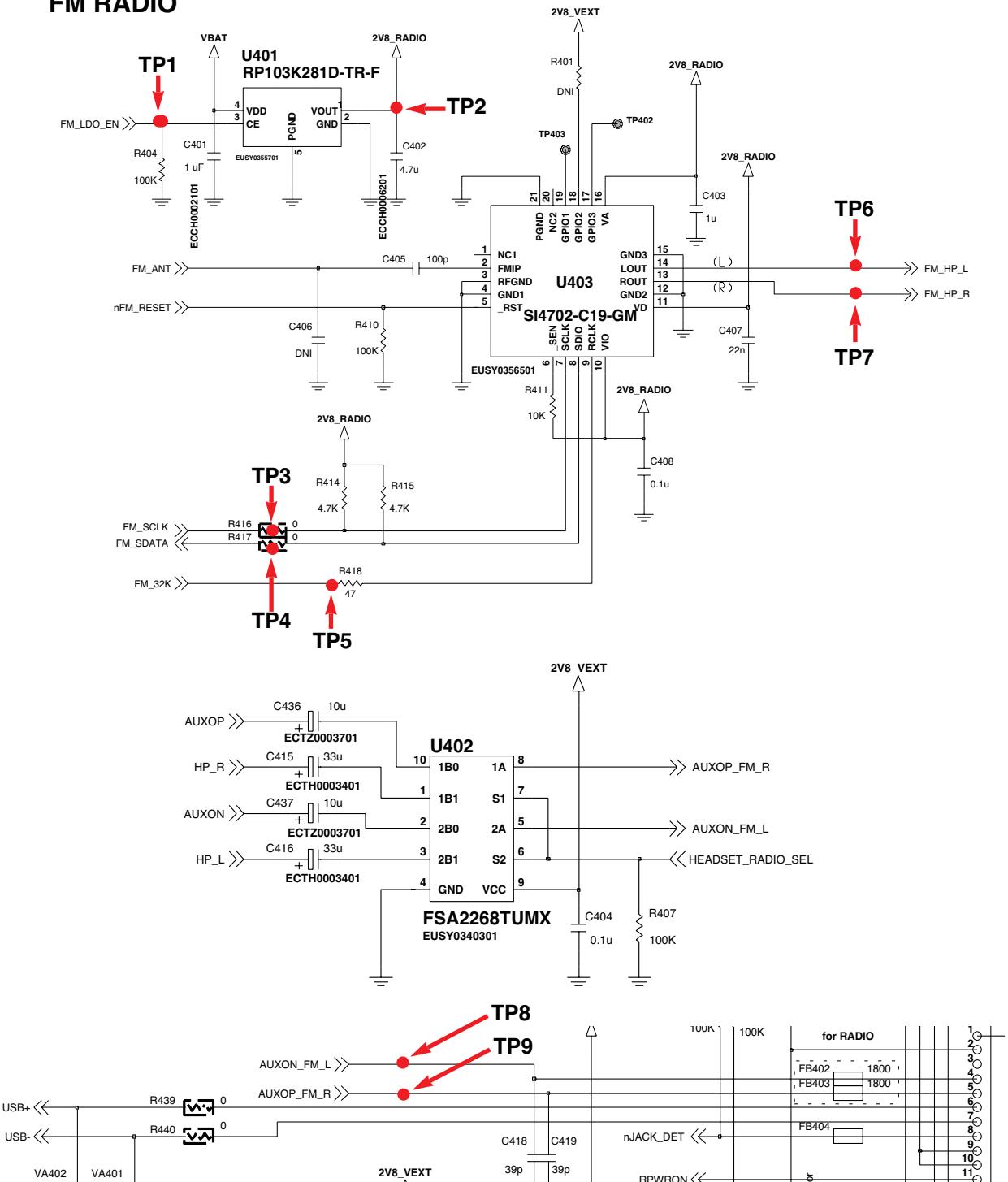


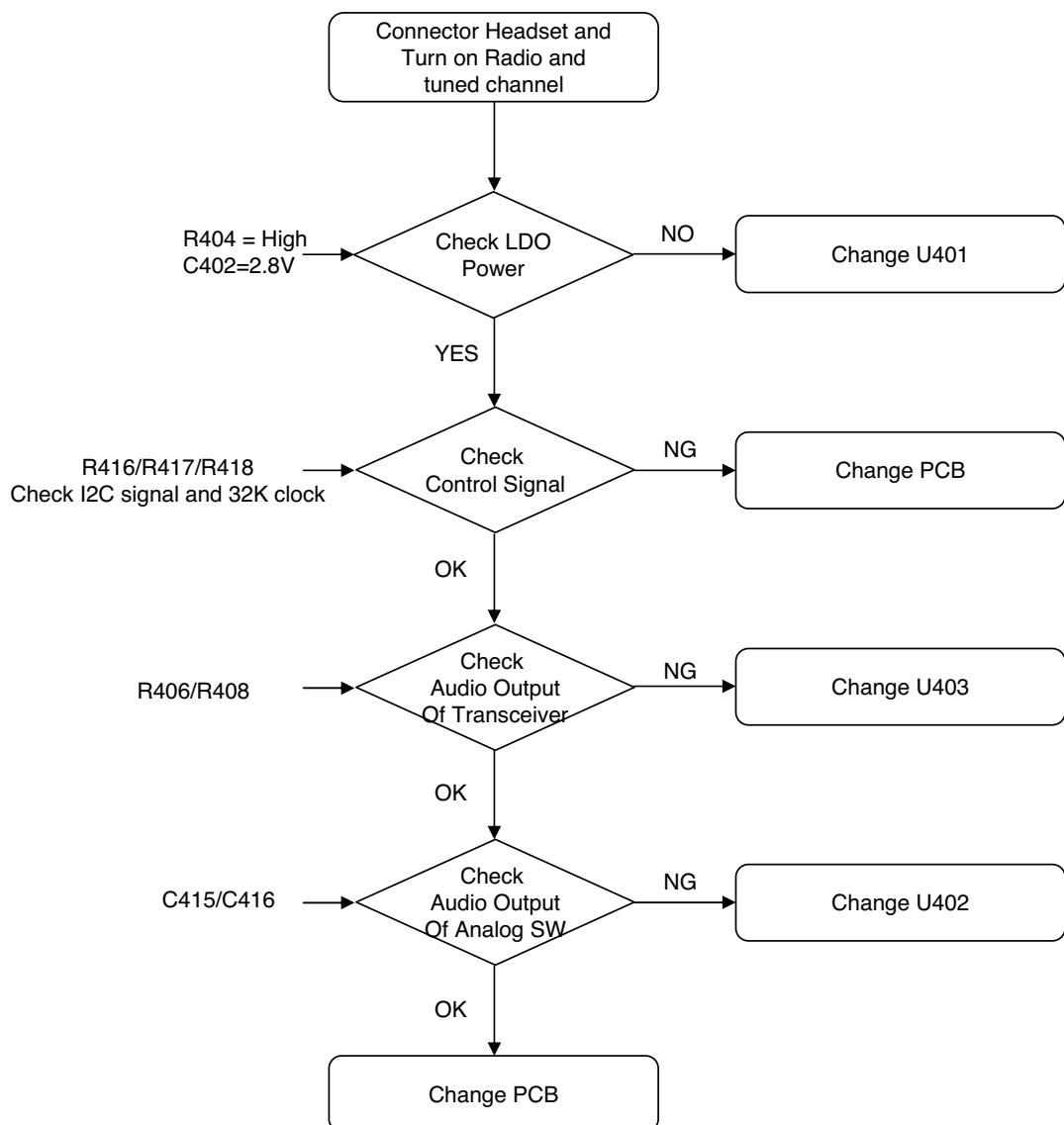
Figure 4.15

CIRCUIT DIAGRAM

FM RADIO



CHECKING FLOW



4.16 MP3 Trouble

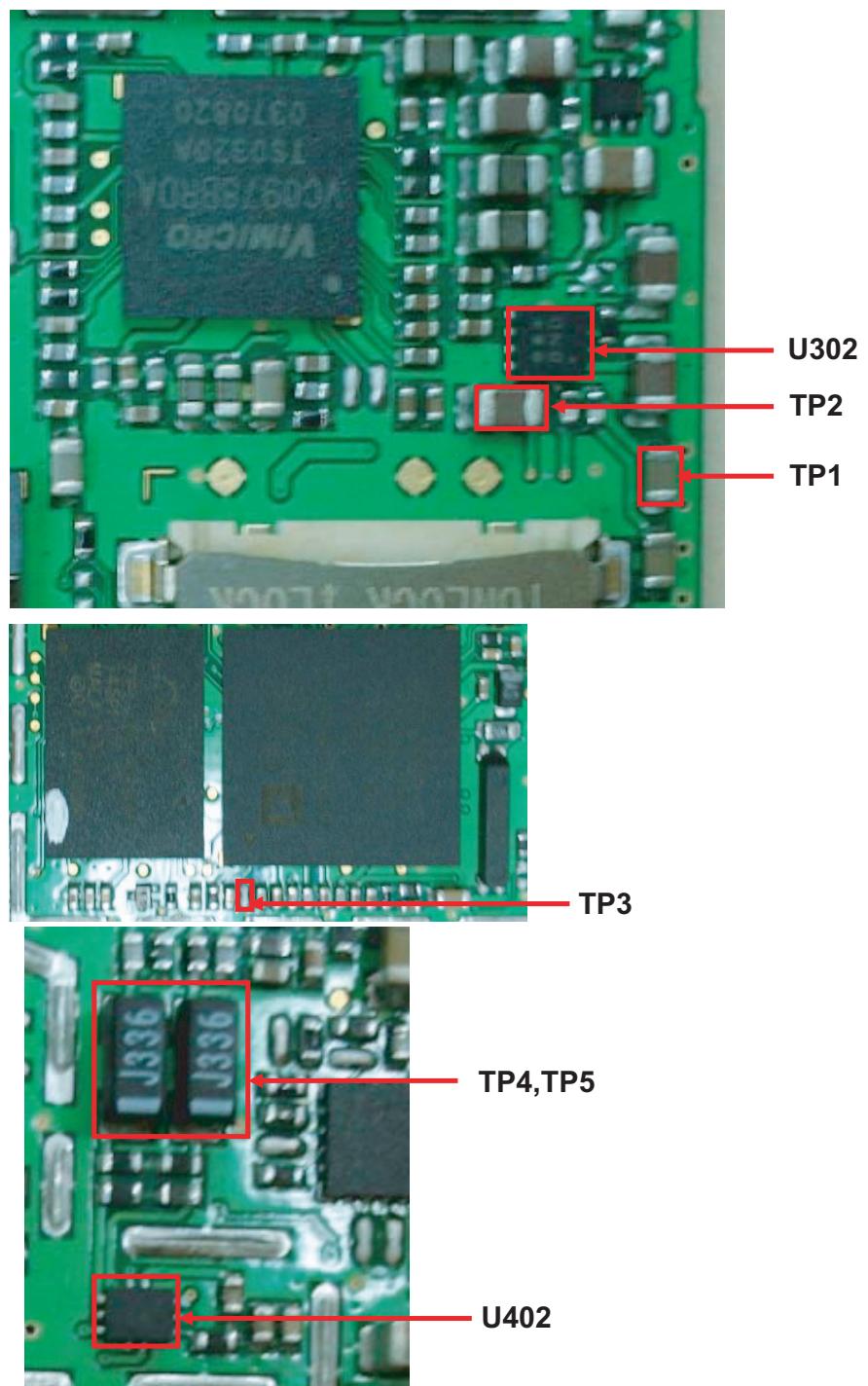
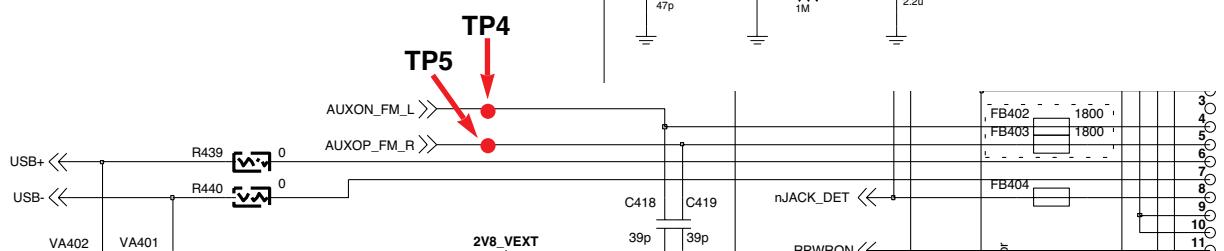
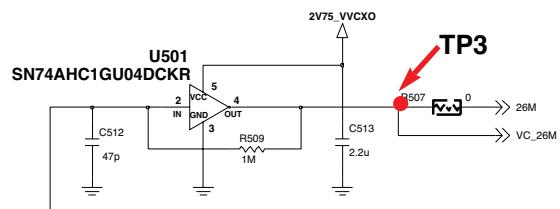
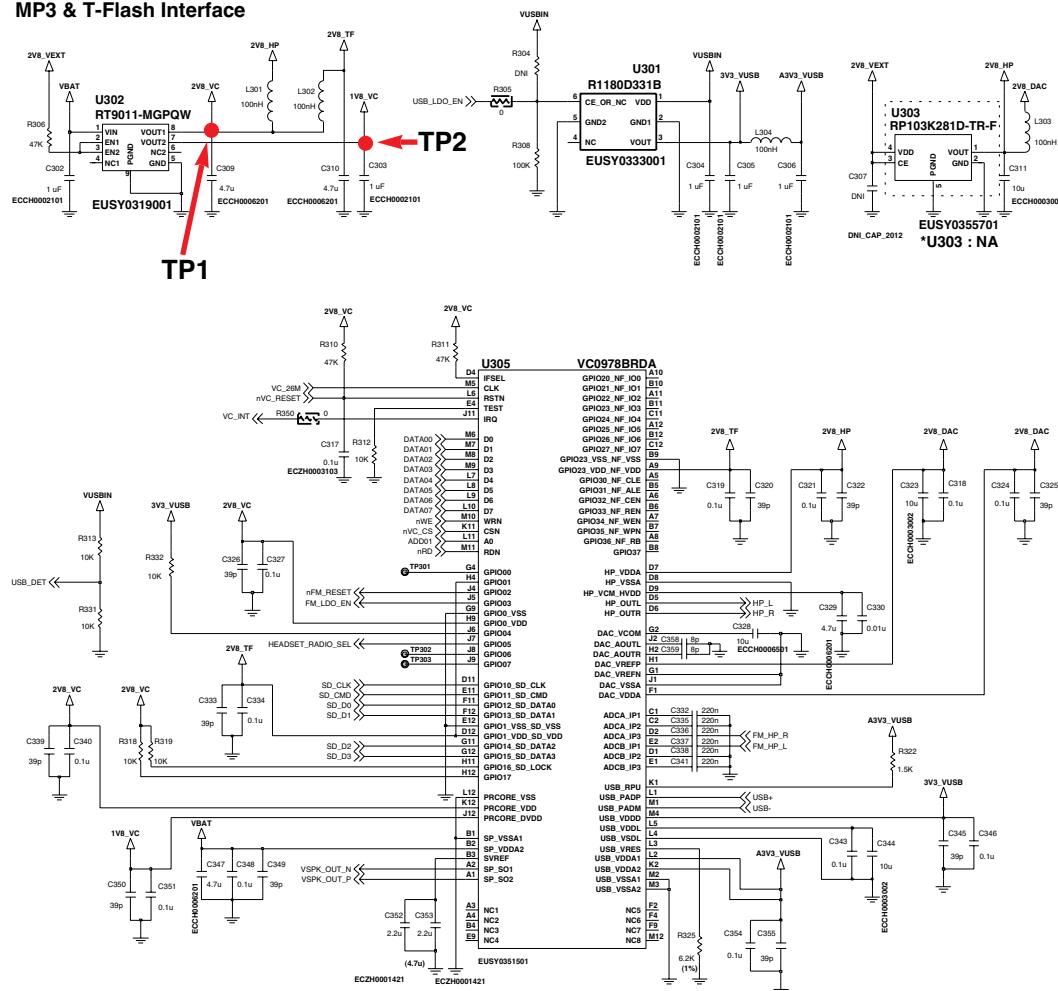


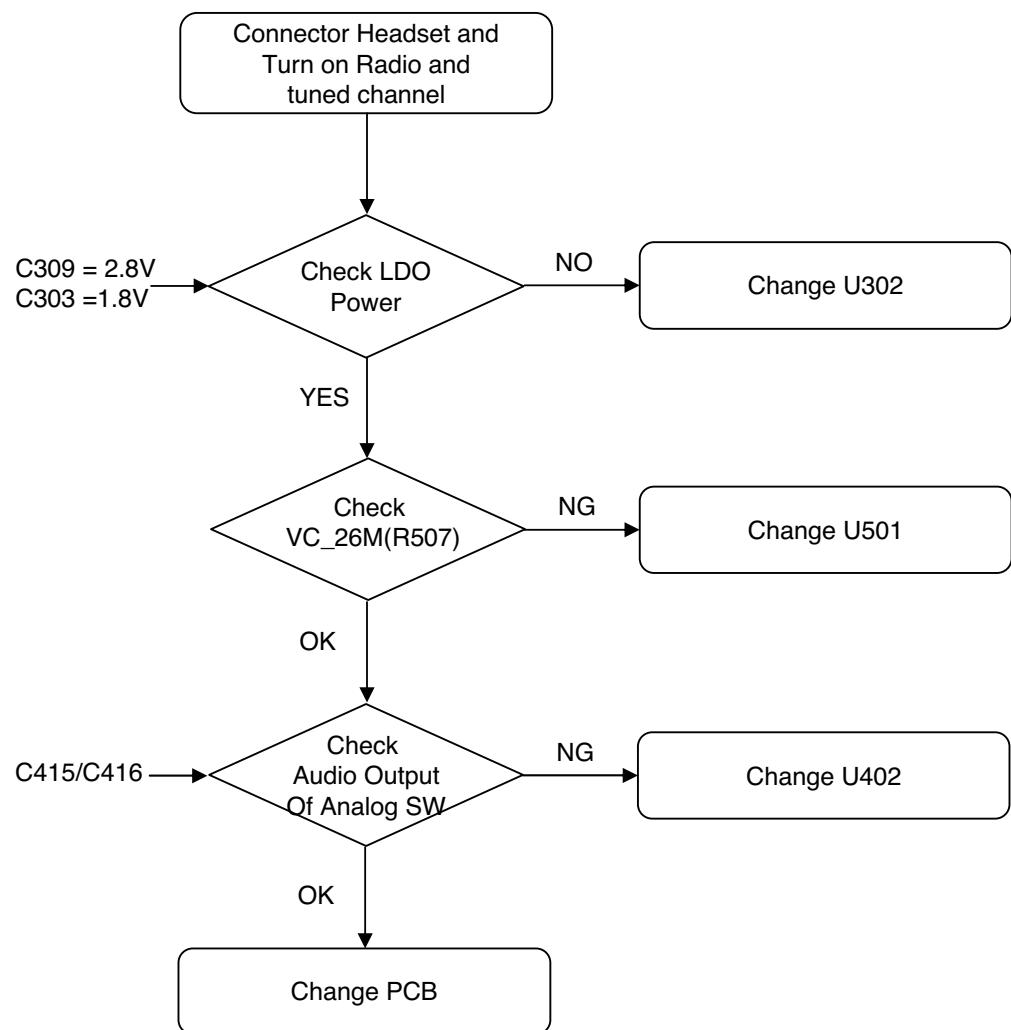
Figure 4.16

CIRCUIT DIAGRAM

MP3 & T-Flash Interface



CHECK FLOW



5. DOWNLOAD

5. DOWNLOAD

5.1 Download

A. Download Setup

Figure 5.1 describes Download setup

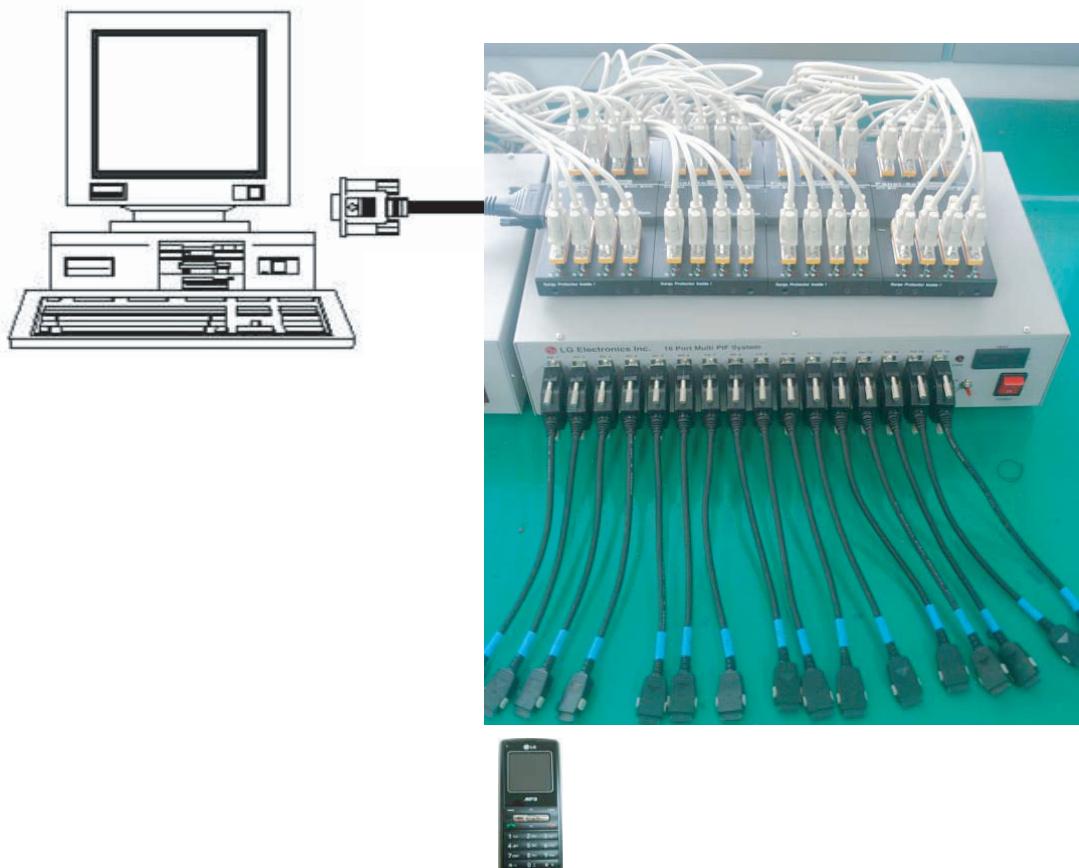
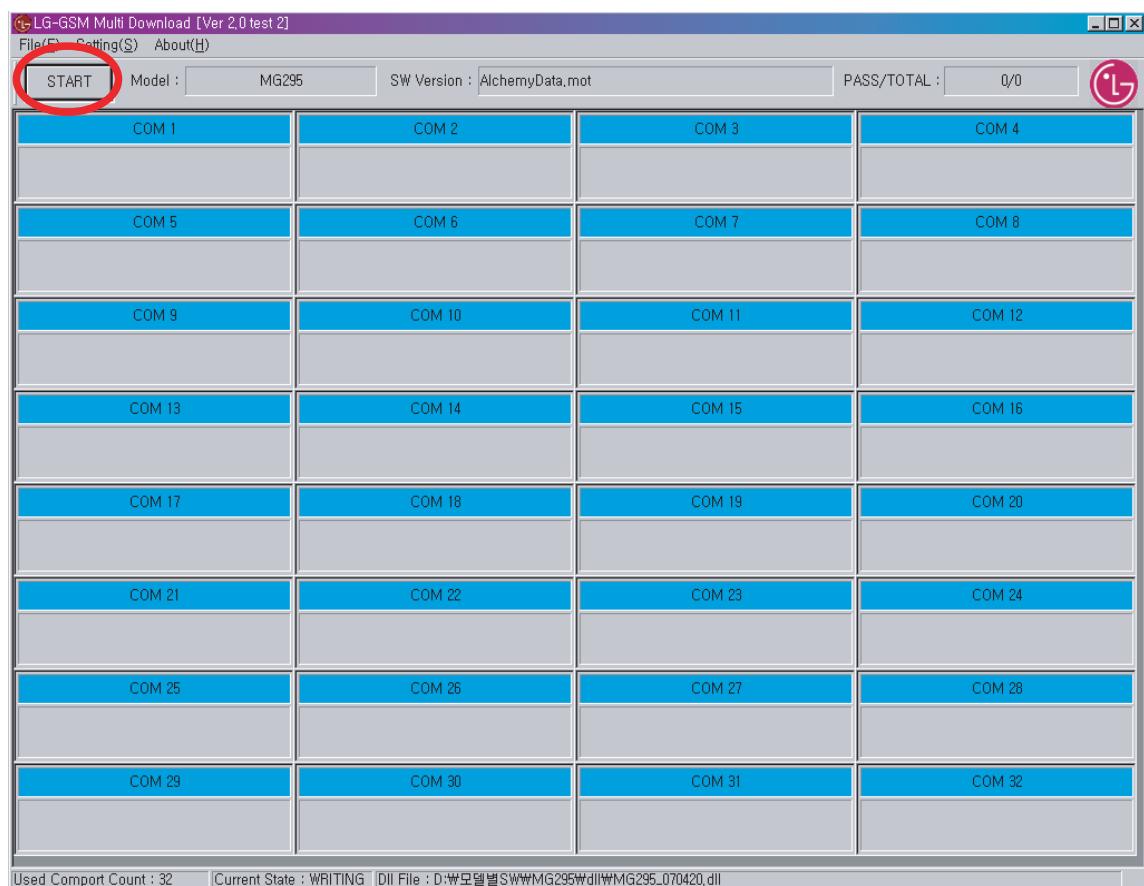


Figure 5.1 Download Setup

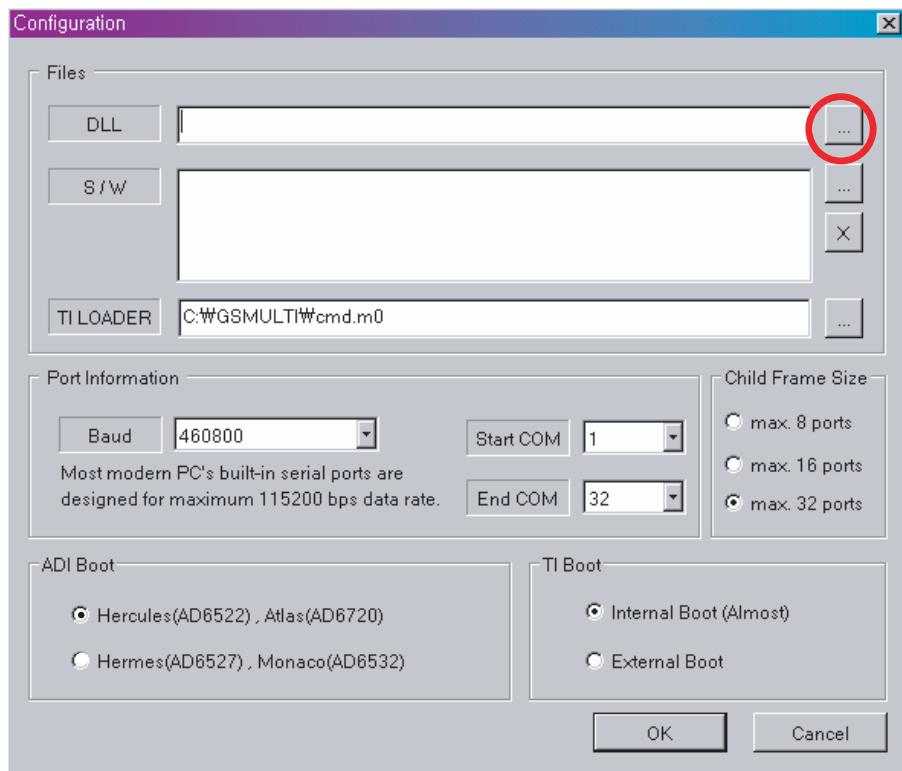
B. Multi Download Procedure

1. Run GSM Multi Download program and select Setting

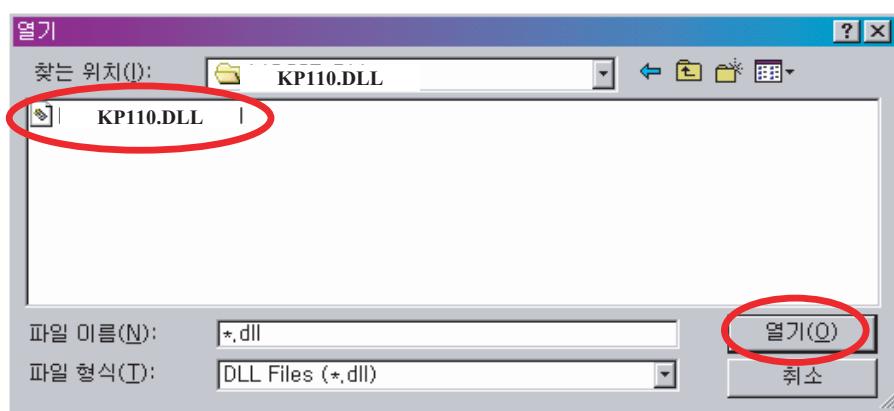


5. DOWNLOAD

2. Select Configuration from the menu and you may see this window

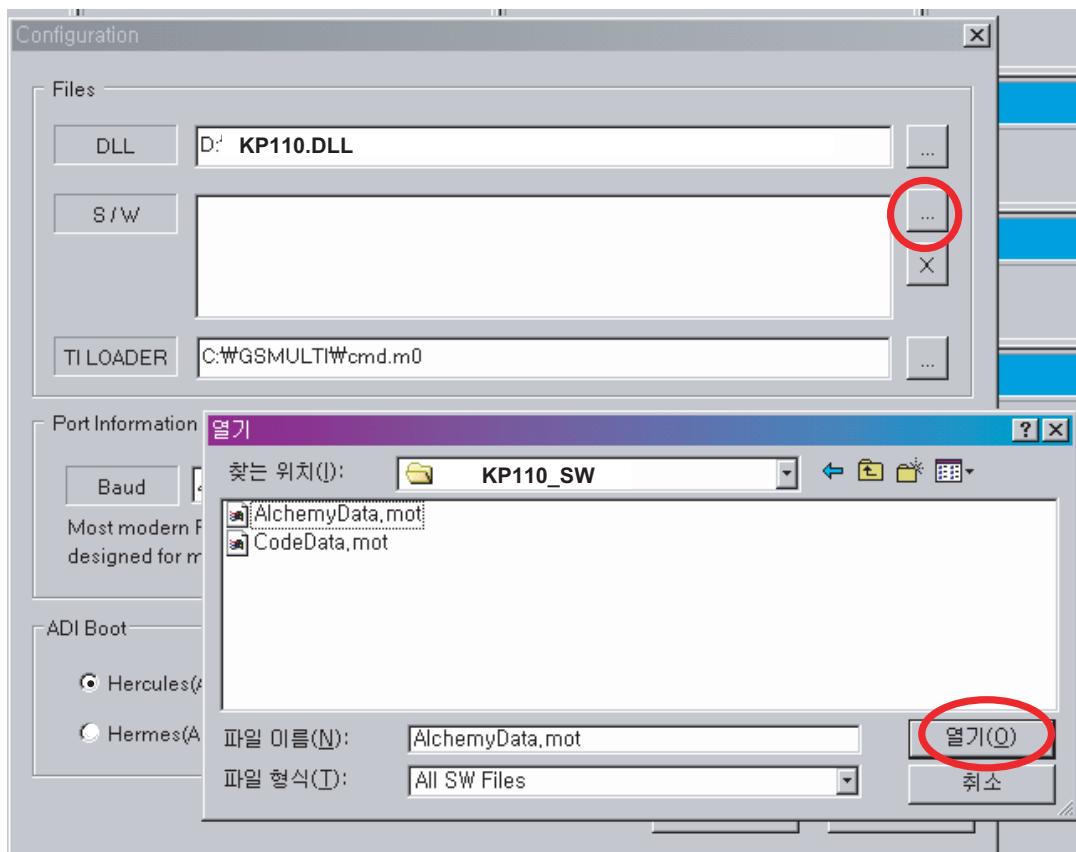


3. Press  key to select DLL file and press Open



5. DOWNLOAD

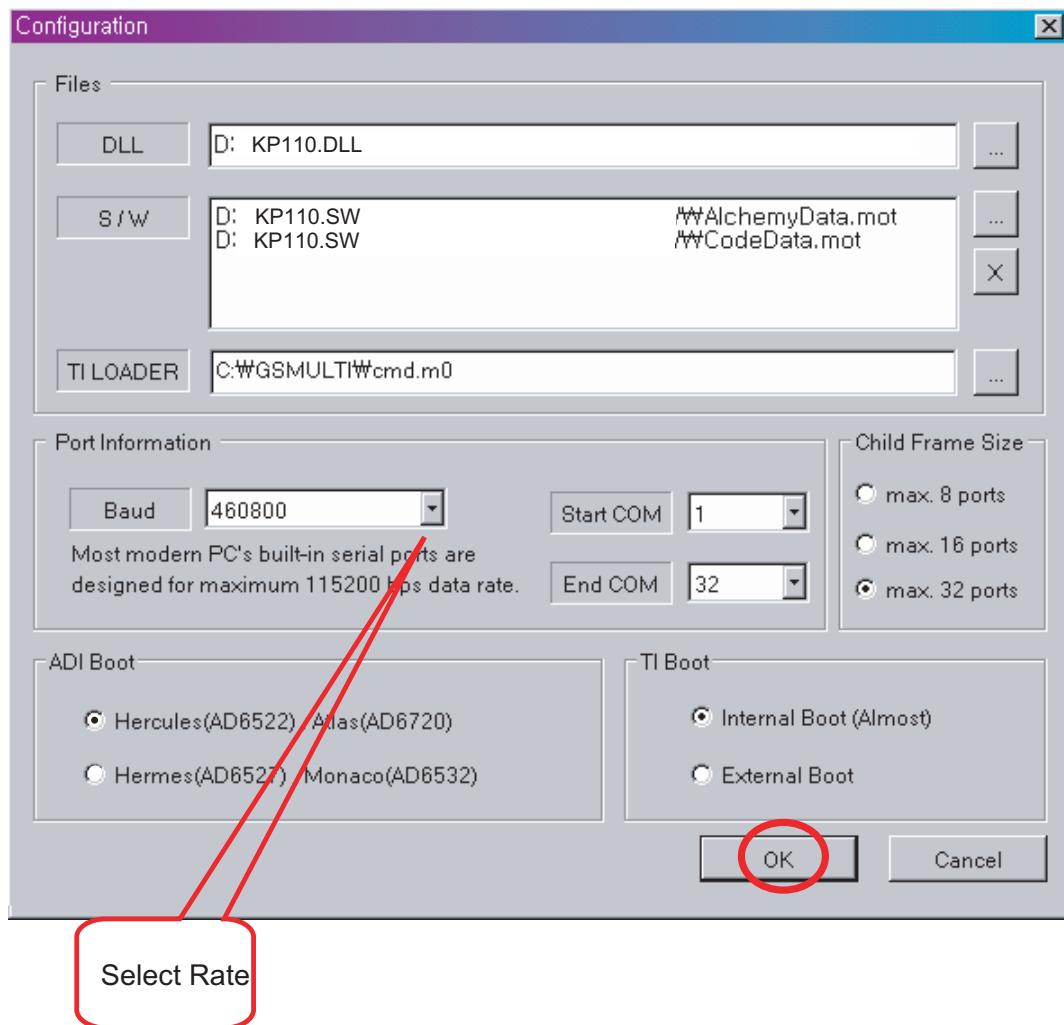
4. Press  key to select the mot files
5. Select AlchemyData.mot and press open
6. Repeat step 4-5 to select CodeData.mot



5. DOWNLOAD

7. Check if the ADI option is set to Hermes

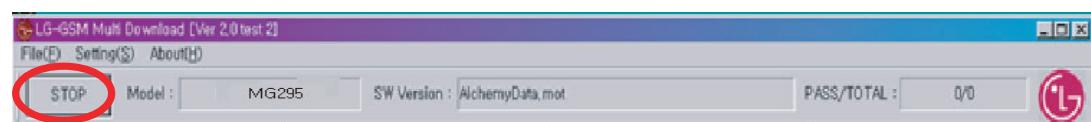
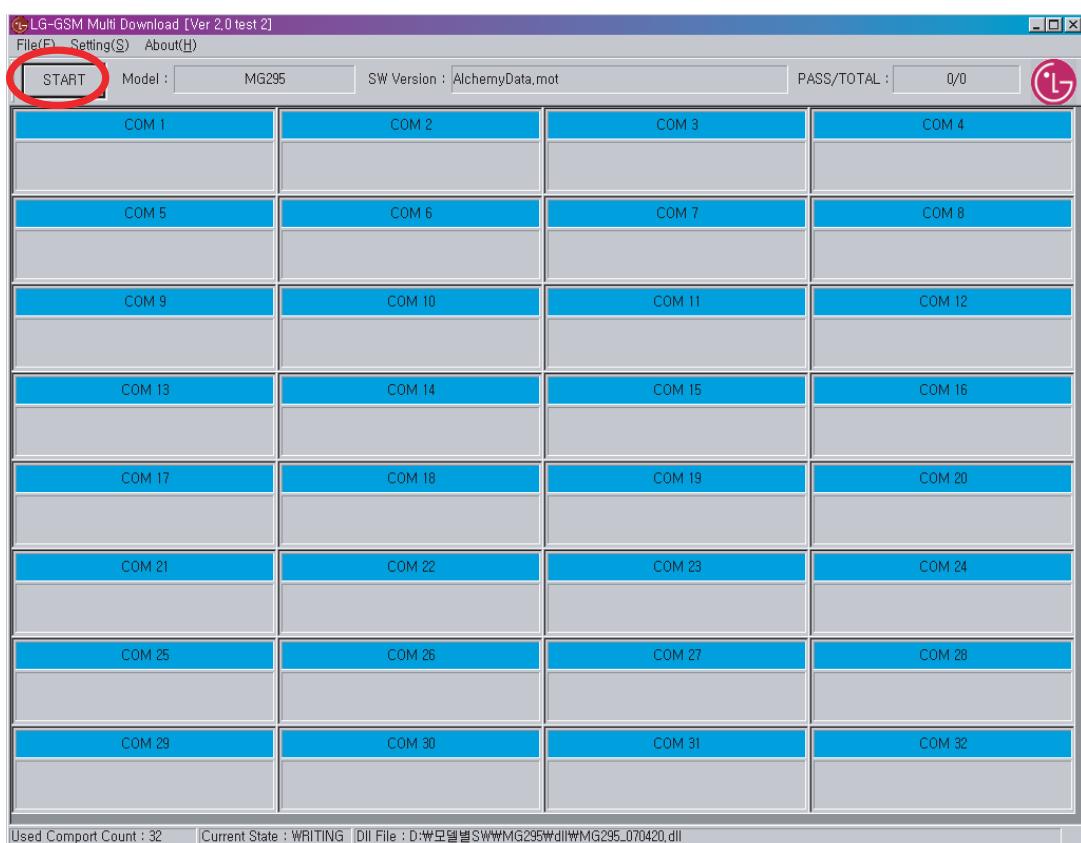
8. Press OK to end Configuration



5. DOWNLOAD

9. Press START to execute download

10. Once downloading is started, press STOP button to keep from re-downloading after downloading is completed.



6. BLOCK DIAGRAM

6. BLOCK DIAGRAM

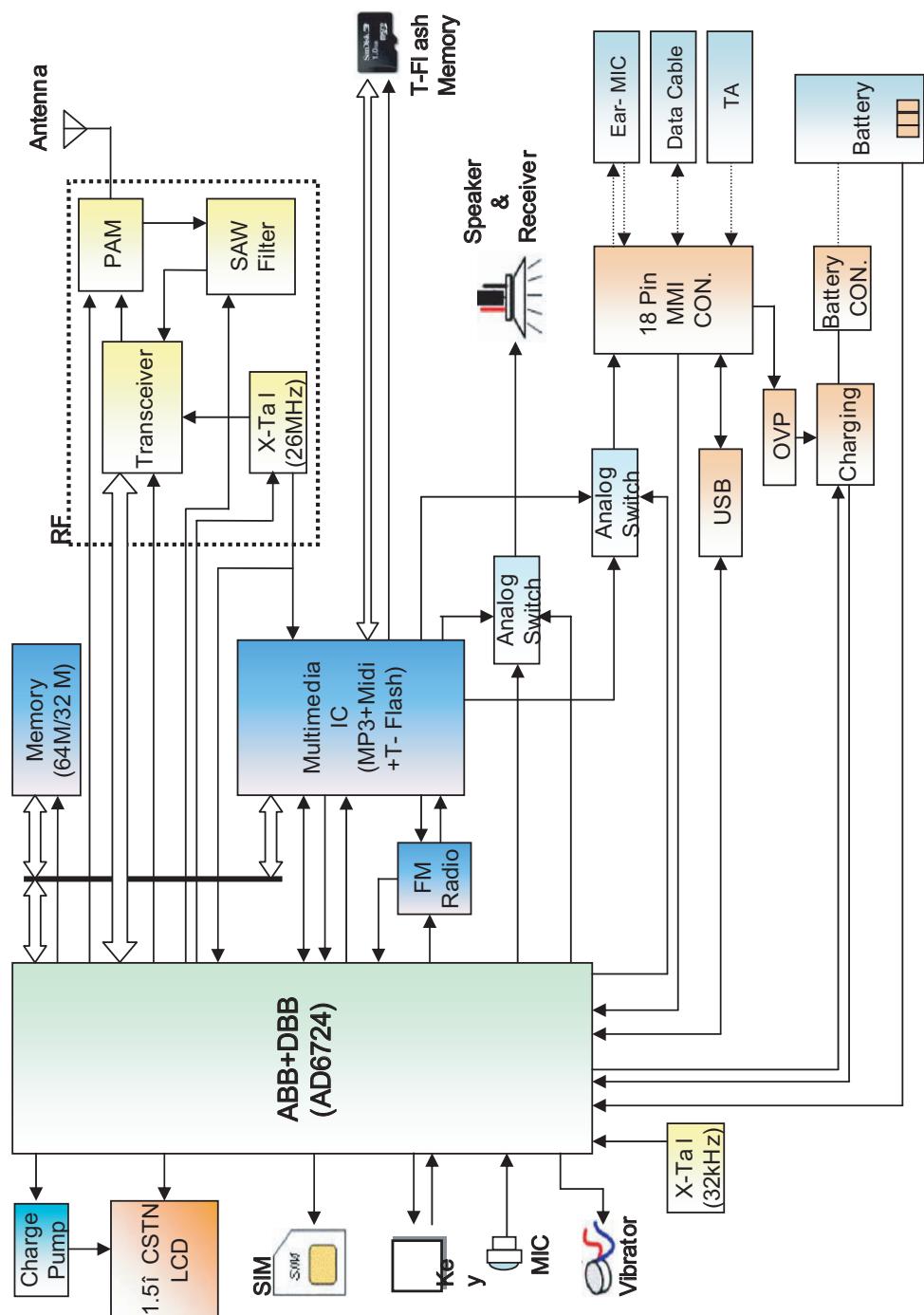
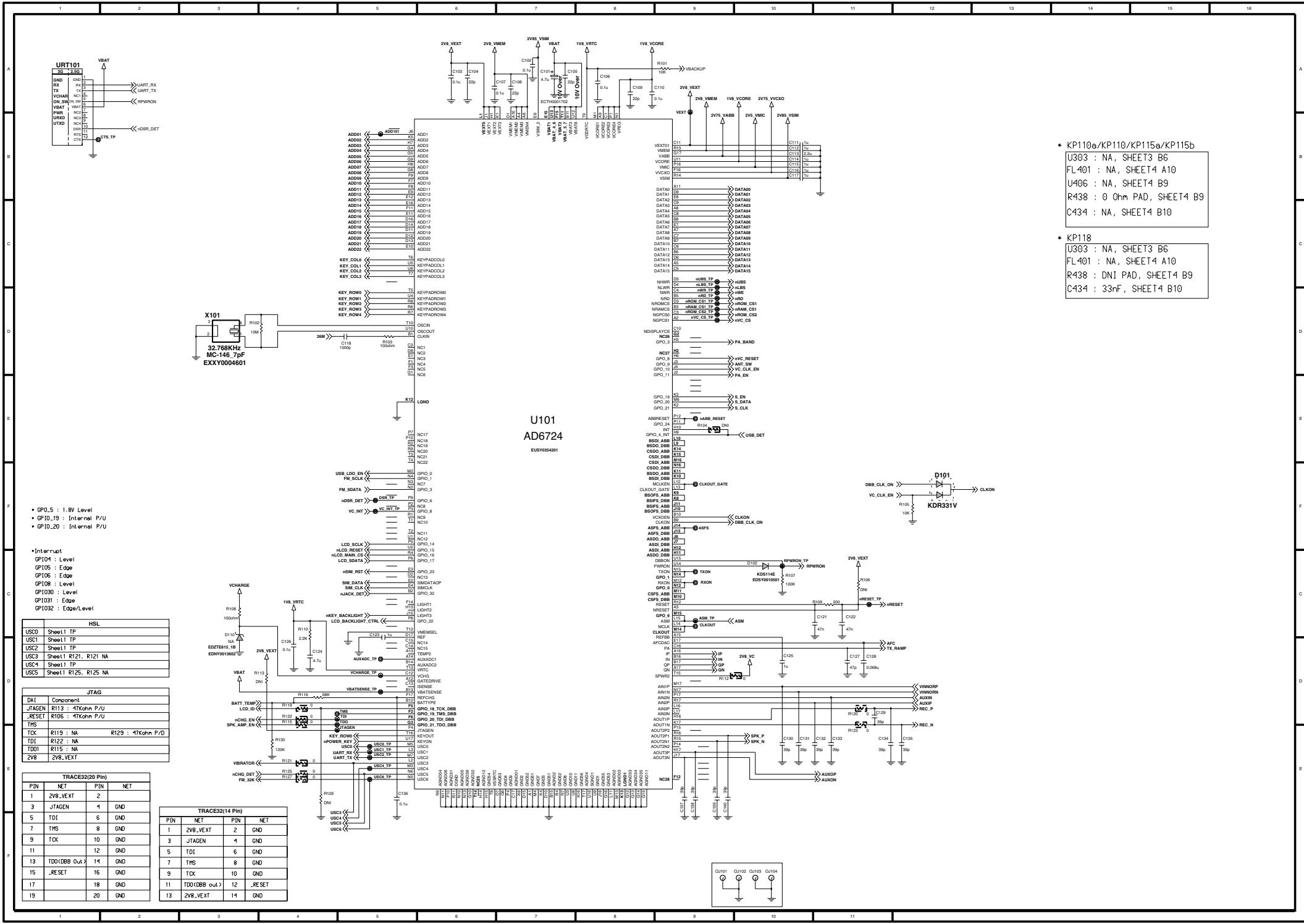
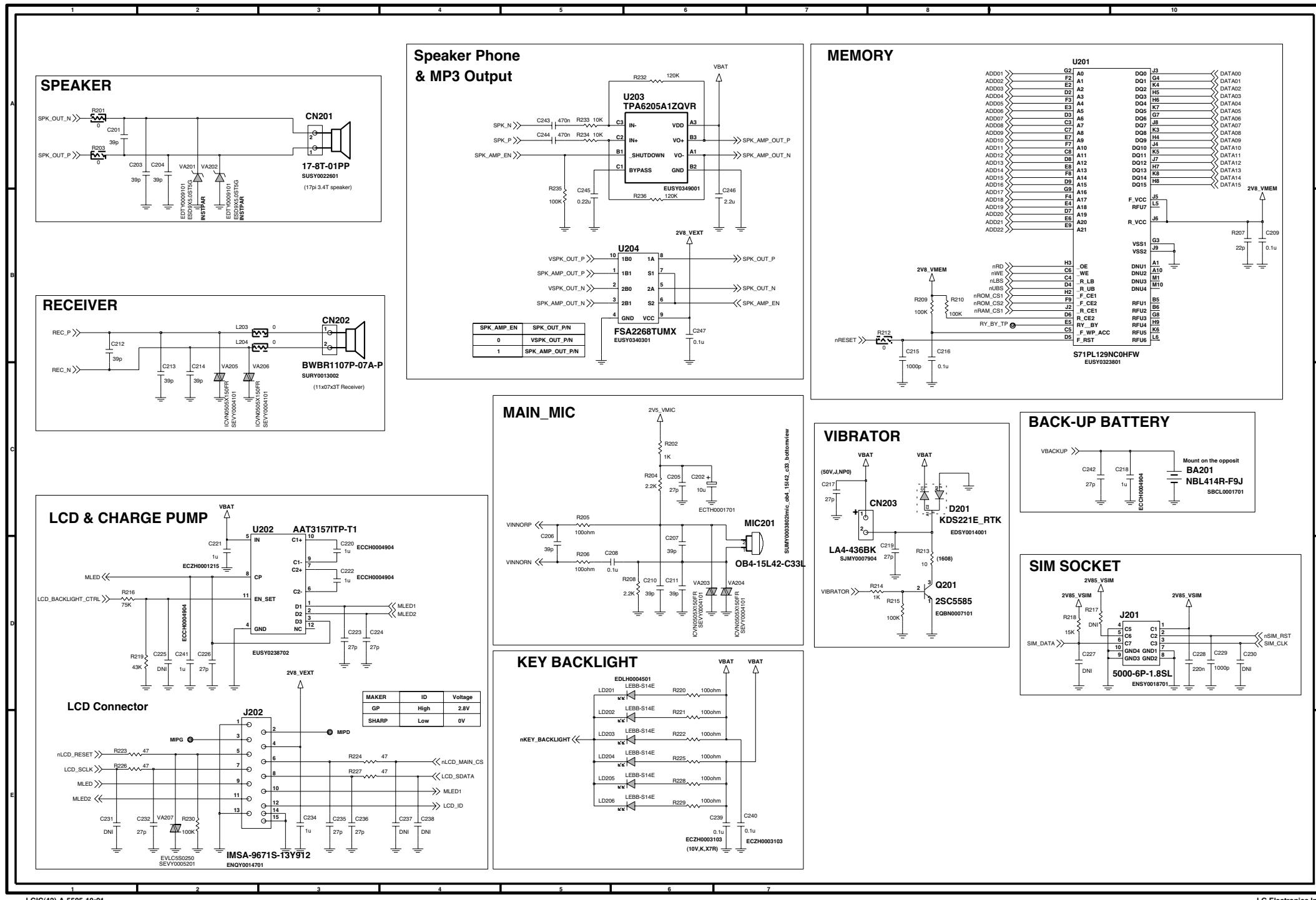


Figure 6.1 LG-KP235 Block Diagram

7. CIRCUIT DIAGRAM



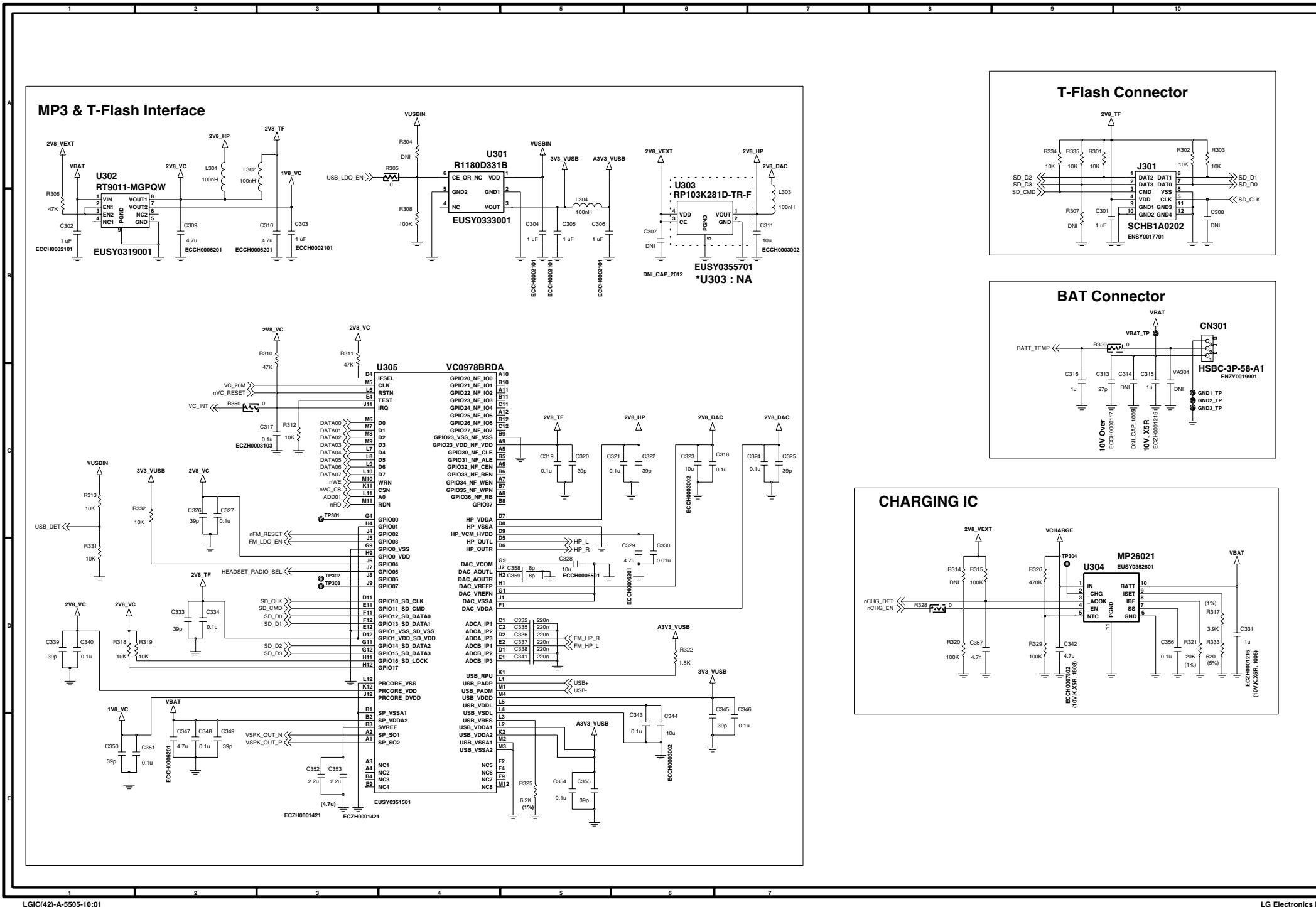
7. CIRCUIT DIAGRAM



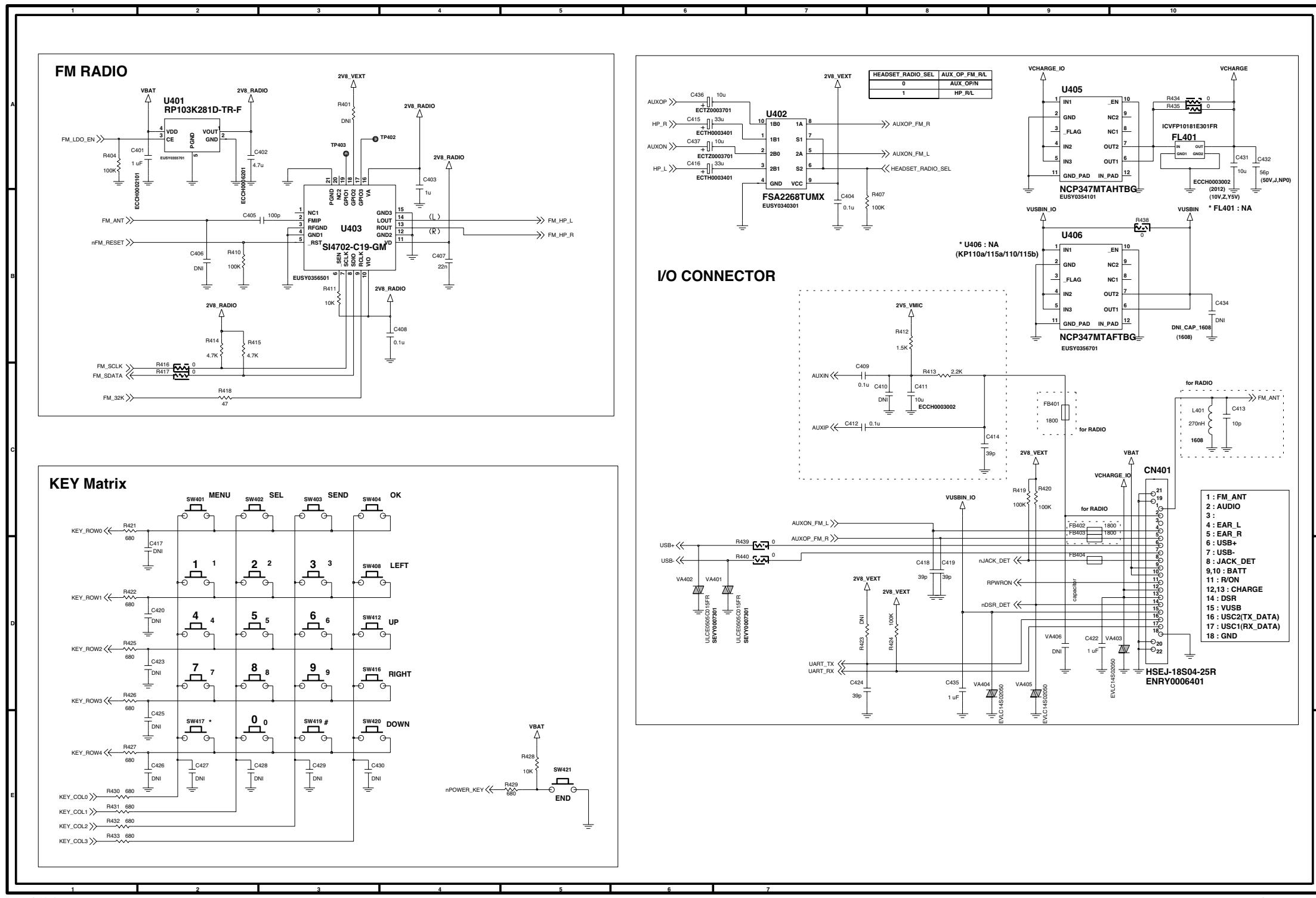
LGIC(42)-A-5505-10:01

LG Electronics Inc.

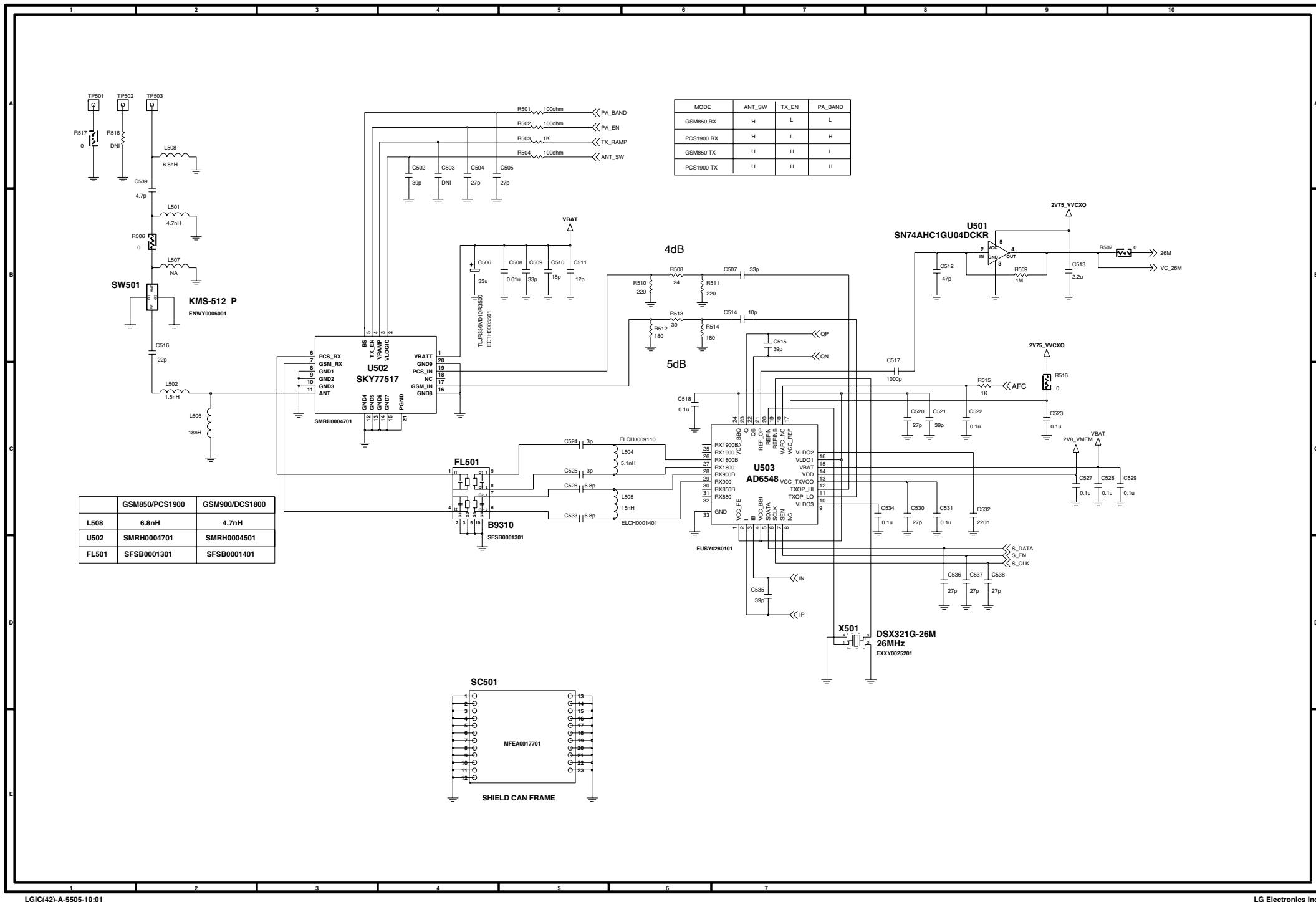
7. CIRCUIT DIAGRAM



7. CIRCUIT DIAGRAM

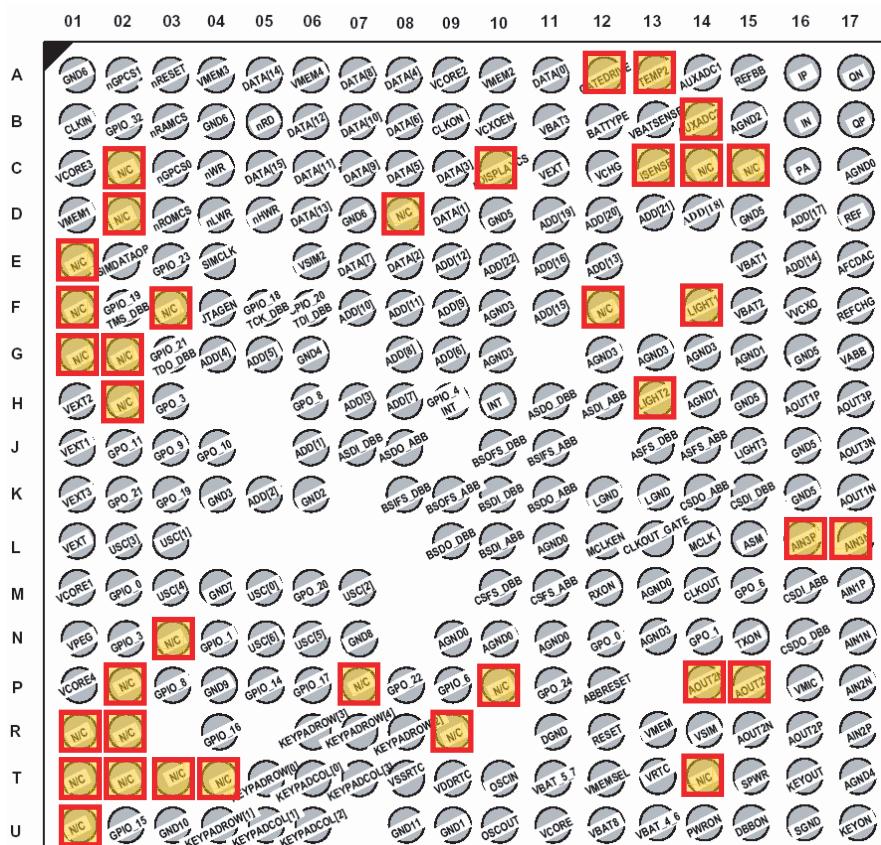


7. CIRCUIT DIAGRAM



8. BGA IC Pin Check

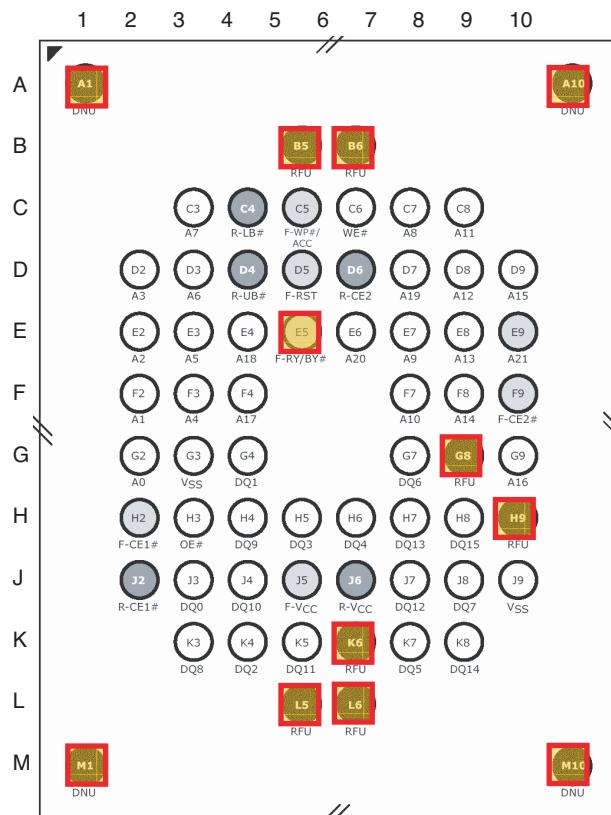
U101 : AD6724



 : Not used

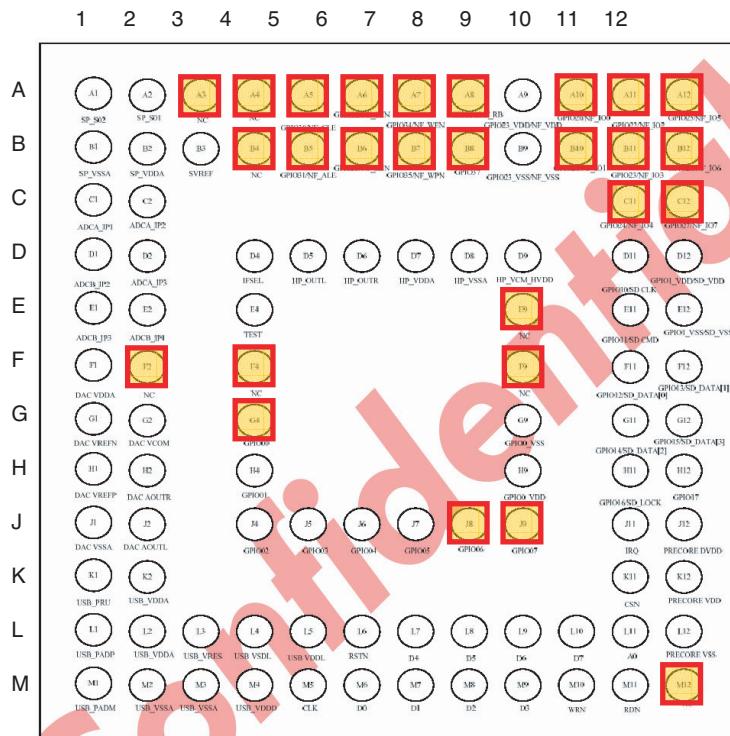
8. BGA IC Pin Check

U201 : S71PL129NC0HFW



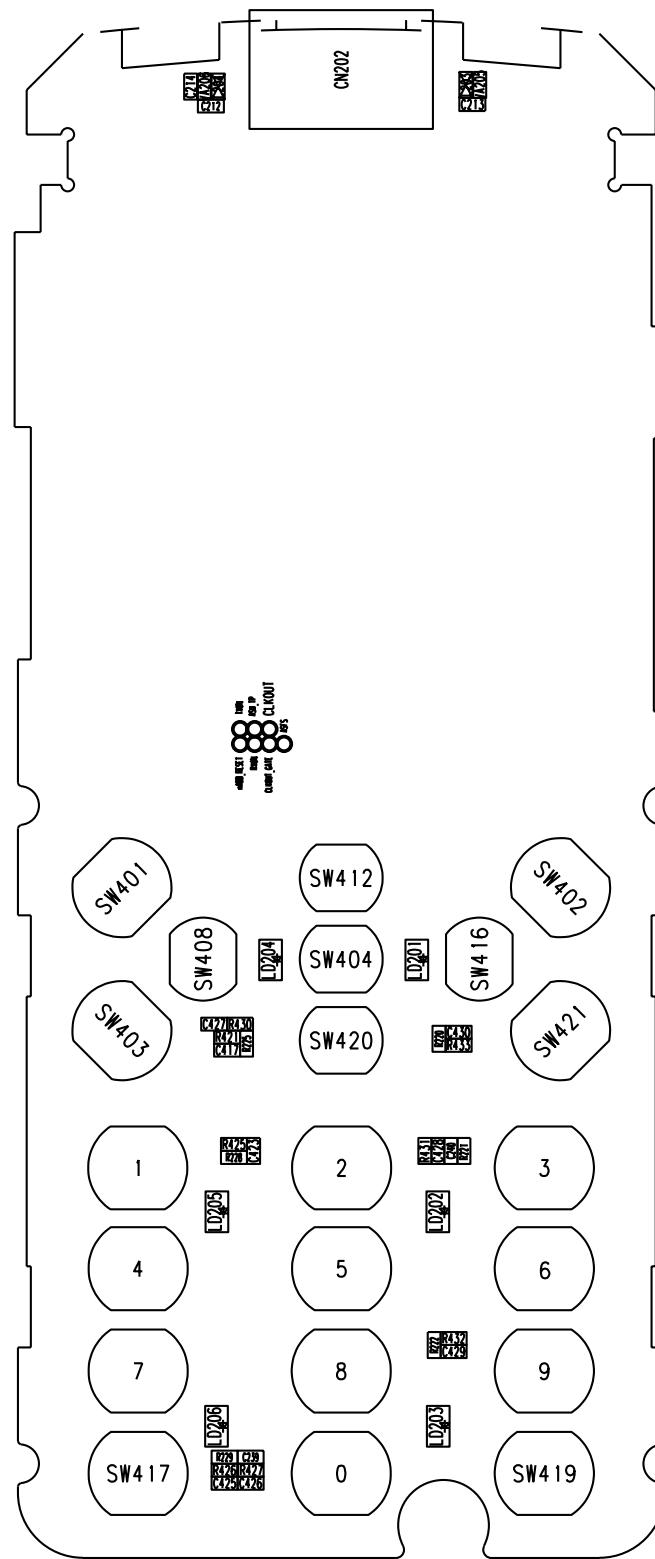
8. BGA IC Pin Check

U305 : VC0978BRDA



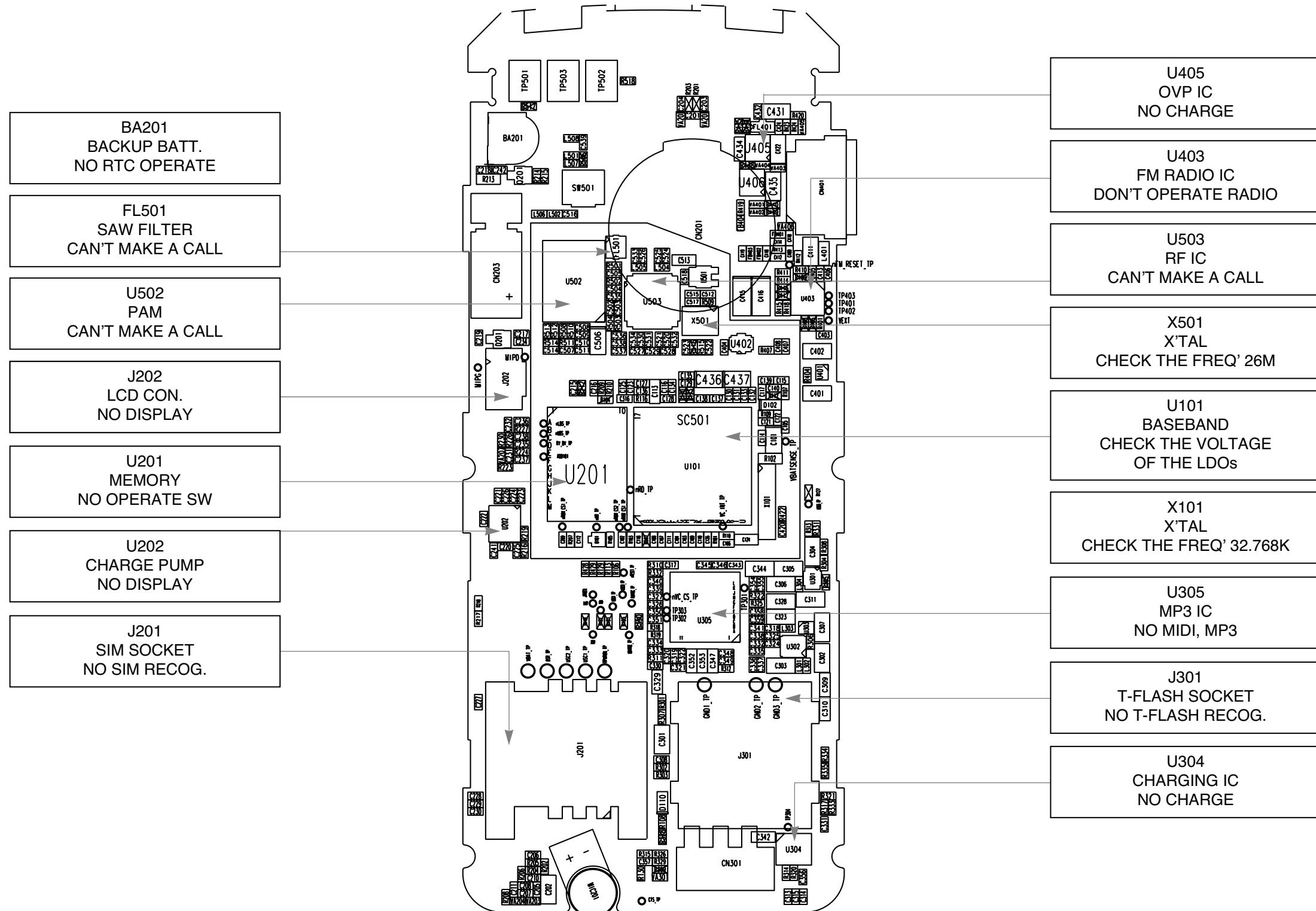
 : Not used

9. PCB LAYOUT



KP110/118/115b-MAIN-SPF Y0169901-1.0-TOP

9. PCB LAYOUT



KP110/118/115b-MAIN-SPFY0169901-1.0-BTM

10. ENGINEERING MODE

A. About Engineering Mode

Engineering mode is designed to allow a service man/engineer to view and test the basic functions provided by a handset.

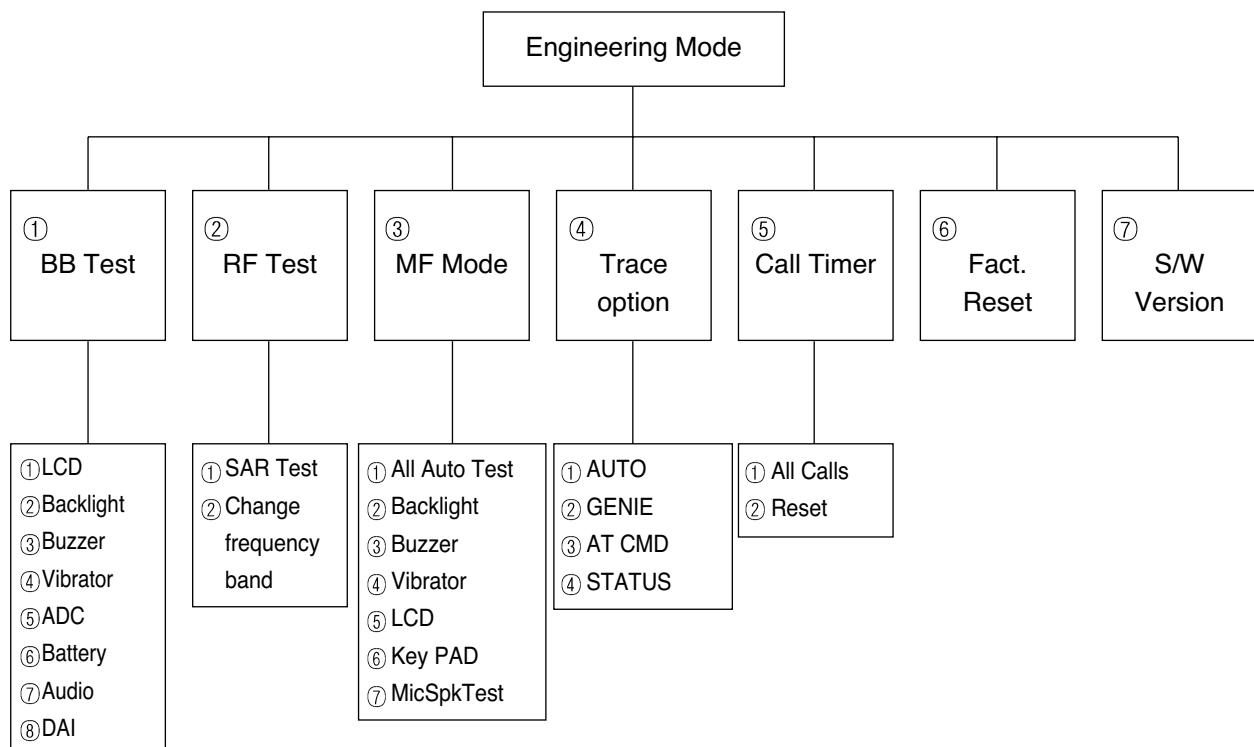
B. Access Codes

The key sequence for switching the engineering mode on is 2945#*#. Pressing END will switch back to non-engineering mode operation.

C. Key Operation

Use Up and Down key to select a menu and press 'select' key to progress the test. Pressing 'back' key will switch back to the original test menu.

D. Engineering Mode Menu Tree



10. ENGINEERING MODE

10.1 BB Test [MENU 1]

10.1.1 LCD

- 1) Brightness
- 2) COLOUR : WHITE, RED, GREEN, BLUE, BLACK

10.1.2 Backlight

This menu is to test the LCD Backlight.

- 1) Backlight on : LCD Backlight on.
- 2) Backlight off : LCD Backlight off.
- 3) Backlight value : This controls brightness of Backlight. When entering into the menu, the present backlight-value in the phone is displayed. Use Left/Right key to adjust the level of brightness. The value of the brightness set at last will be saved in the NVRAM.

10.1.3 Buzzer

This menu is to test the melody sound.

- 1) Melody on : Melody sound is played through the speaker.
- 2) Melody off : Melody sound is off.

10.1.4 Vibrator

This menu is to test the vibration mode.

- 1) Vibrator on : Vibration mode is on.
- 2) Vibrator off : Vibration mode is off.

10.1.5 ADC (Analog to Digital Converter)

This displays the value of each ADC.

- 1) MVBAT ADC : Main Voltage Battery ADC
- 2) AUX ADC : Auxiliary ADC
- 3) TEMPER ADC : Temperature ADC

10.1.6 BATTERY

- 1) Bat Cal : This displays the value of Battery Calibration. The following menus are displayed in order :
BATLEV_4V, BATLEV_3_LIMIT, BATLEV_2_LIMIT, BATLEV_1_LIMIT, BAT_IDLE_LIMIT,
BAT_INCALL_LIMIT, SHUT_DOWN_VOLTAGE, BAT_RECHARGE_LMT
- 2) TEMP Cal : This displays the value of Temperature Calibration. The following menus are displayed in order : TEMP_HIGH_LIMIT, TEMP_HIGH_RECHARGE_LMT, TEMP_LOW_RECHARGE_LMT, TEMP_LOW_LIMIT

10.1.7 Audio

This is NOT a necessary menu to be used by neither engineers nor users.

10.1.8 DAI (Digital Audio Interface)

This menu is to set the Digital Audio Interface Mode for Speech Transcoder and Acoustic testing.

- 1) DAI AUDIO : DAI audio mode
- 2) DAI UPLINK : Speech encoder test
- 3) DAI DOWNLINK : Speech decoder test
- 4) DAI OFF : DAI mode off

10.2 RF Test [MENU 2]

10.2.1 SAR test

This menu is to test the Specific Absorption Rate.

- 1) SAR test on : Phone continuously process TX only. Call-setup equipment is not required.
- 2) SAR test off : TX process off

10.2.2 Change frequency band

This menu is to change frequency band.

- 1) GSM ONLY
- 2) DCS ONLY
- 3) PCS ONLY
- 4) 850 ONLY
- 5) DEFAULT

10. ENGINEERING MODE

10.3 MF mode [MENU 3]

This manufacturing mode is designed to do the baseband test automatically. Selecting this menu will process the test automatically, and phone displays the previous menu after completing the test.

10.3.1 All auto test

LCD, Backlight, Vibrator, Buzzer, Key Pad, Mic & Speaker,

10.3.2 Backlight

LCD Backlight is on for about 1.5 seconds at the same time, then off.

10.3.3 Buzzer

This menu is to test the volume of Melody. It rings in the following sequence. Volume 1, Volume 2, Volume 3, Volume 0 (mute), Volume 4, Volume 5.

10.3.4 Vibrator

Vibrator is on for about 1.5 seconds.

10.3.5 LCD

1) LCD

Main LCD screen resolution tests horizontally and vertically one by one and fills the screen.

10.3.6 Key pad

When a pop-up message shows 'Press Any Key', you may press any keys including side keys, but not [Soft2 Key]. If the key is working properly, name of the key is displayed on the screen. Test will be completed in 15 seconds automatically.

10.3.7 MicSpk Test

The sound from MIC is recorded for about 3 seconds, then it is replayed on the speaker automatically.

10.4 Trace option [MENU 4]

This is NOT a necessary menu to be used by neither engineers nor users.

10.5 Call timer [MENU 5]

This menu is to set the Digital Audio Interface Mode for Speech Transcoder and Acoustic testing.

- 1) All calls : This displays total conversation time. User cannot reset this value.
- 2) Reset settings : This resets total conversation time to this, [00:00:00].

10.6 Fact. Reset [MENU 6]

This Factory Reset menu is to format data block in the flash memory and this procedure set up the default value in data block.

Attention

- ① Fact. Reset (i.e.Factory Reset) should be only used during the Manufacturing process.
- ② Servicemen should NOT progress this menu, otherwise some of valuable data such as Setting value, RF Calibration data, etc. cannot be restored again.

10.7 S/W version

This displays software version stored in the phone.

11. STAND ALONE TEST

11. STAND ALONE TEST

11.1 Introduction

This manual explains how to examine the status of RX and TX of the model.

A. Tx Test

TX test - this is to see if the transmitter of the phones is activating normally.

B. Rx Test

RX test - this is to see if the receiver of the phones is activating normally.

11.2 Setting Method

A. COM port

- a. Move your mouse on the “Option” button, then click the right button of the mouse and select “Com setting”.
- b. In the “Dialog Menu”, select the values as explained below.
 - Port : select a correct COM port
 - Baud rate : 115000
 - Leave the rest as default values

B. Tx

1. Selecting Channel
 - Select one of GSM or DCS/PCS Band and input appropriate channel.
2. Selecting APC
 - a. Select either Power level or Scaling Factor.
 - b. Power level
 - Input appropriate value GSM850 (between 5~19) or DCS/PCS (between 0~15)
 - c. Scaling Factor
 - A ‘Ramp Factor’ appears on the screen.
 - You may adjust the shape of the Ramp or directly input the values.

C. Rx

1. Selecting Channel
 - Select one of GSM850 or DCS/PCS Band and input appropriate channel.
2. Gain Control Index (0~ 26) and RSSI level
 - See if the value of RSSI is close to -16dBm when setting the value between 0 ~ 26 in Gain Control Index.
 - Normal phone should indicate the value of RSSI close to -16dBm.

11.3 Means of Test

- a. Select a COM port
- b. Set the values in Tx or Rx
- c. Select band and channel
- d. After setting them all above, press connect button.
- e. Press the start button

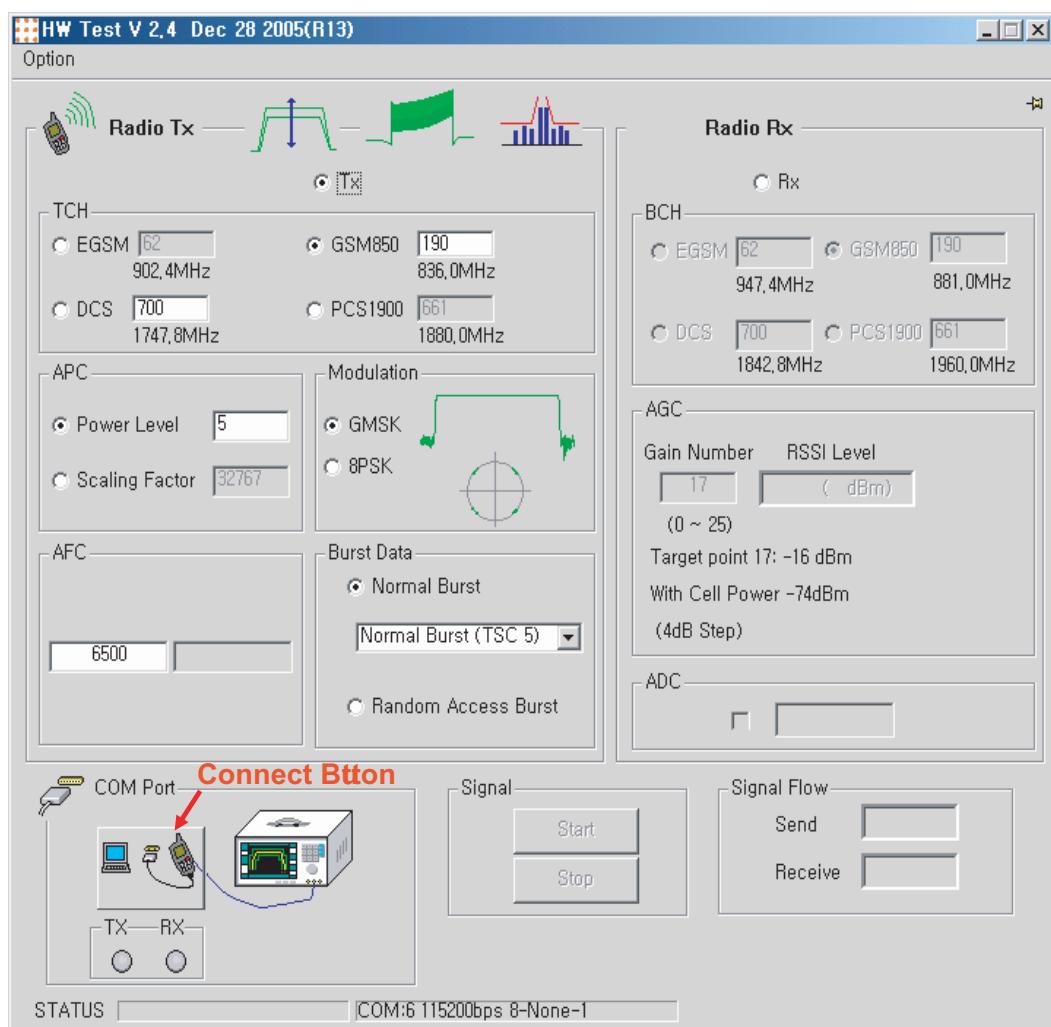


Figure 11.3.1 HW test program

11. STAND ALONE TEST

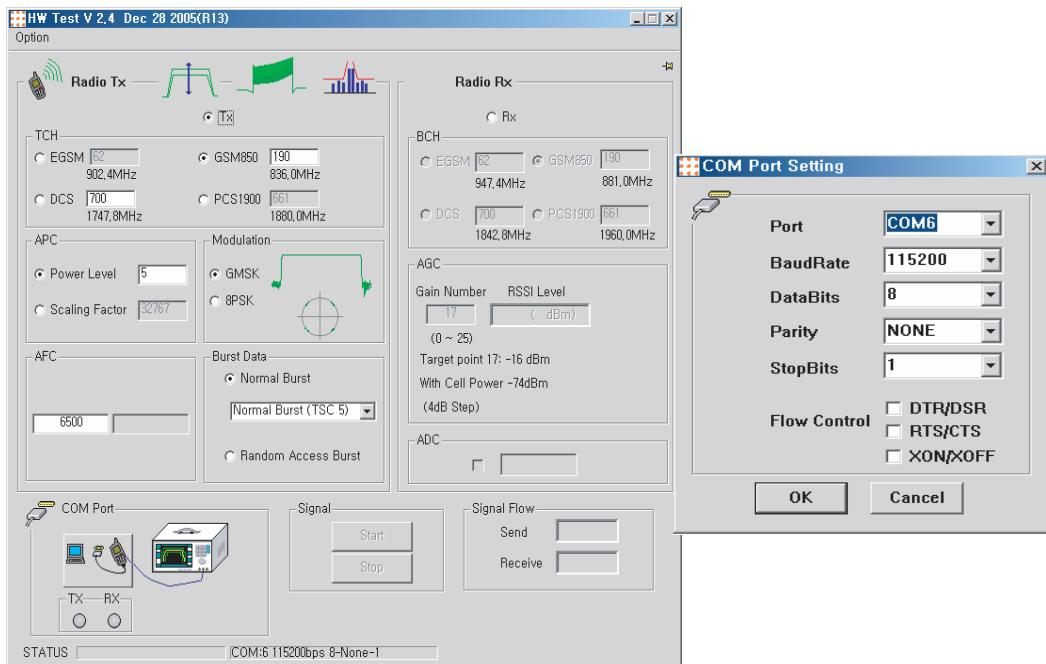


Figure 10.3.2 HW test setting

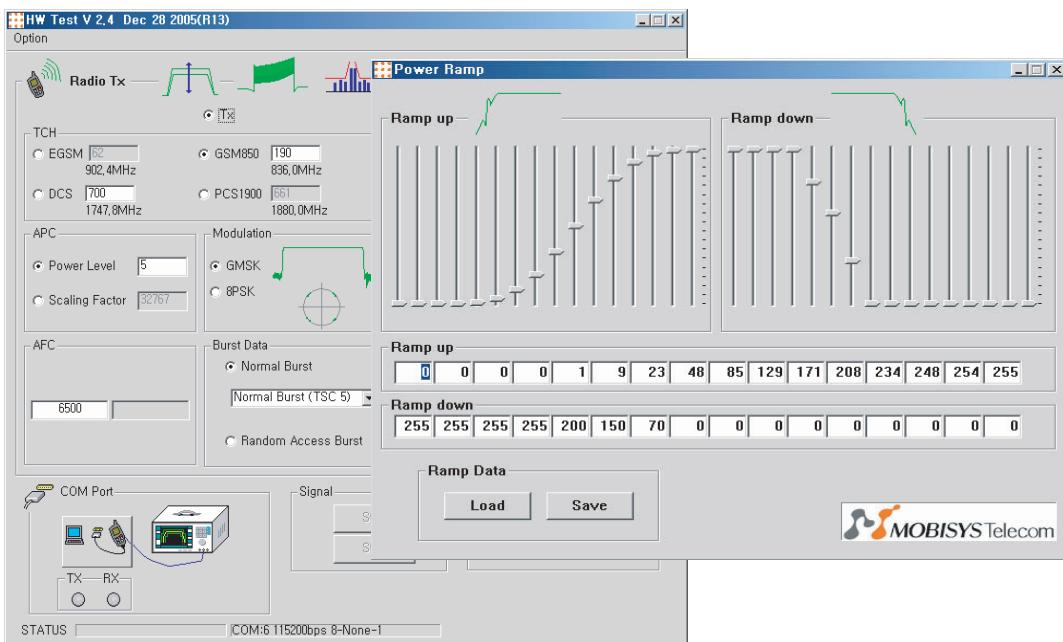


Figure 10.3.3 Ramping profile

12. AUTO CALIBRATION

12.1 Overview

Auto-cal (Auto Calibration) is the PC side Calibration tool that perform Tx, Rx and Battery Calibration with Agilent 8960(GSM call setting instrument) and Tektronix PS2521G(Programmable Power supply). Auto-cal generates calibration data by communicating with phone and measuring equipment then write it into calibration data block of flash memory in GSM phone.

12.2 Equipment List

Equipment for Calibration	Type / Model	Brand
Wireless Communication Test Set	HP-8960	Agilent
RS-232 Cable and Test JIG		LG
RF Cable		LG
Power Supply	HP-66311B	Agilent
GPIO interface card	HP-GPIB	Agilent
Calibration & Final test software		LG
Test SIM Card		
PC (for Software Installation)	Pentium II class above 300MHz	

Table 12.2.1 Calibration Equipment List.

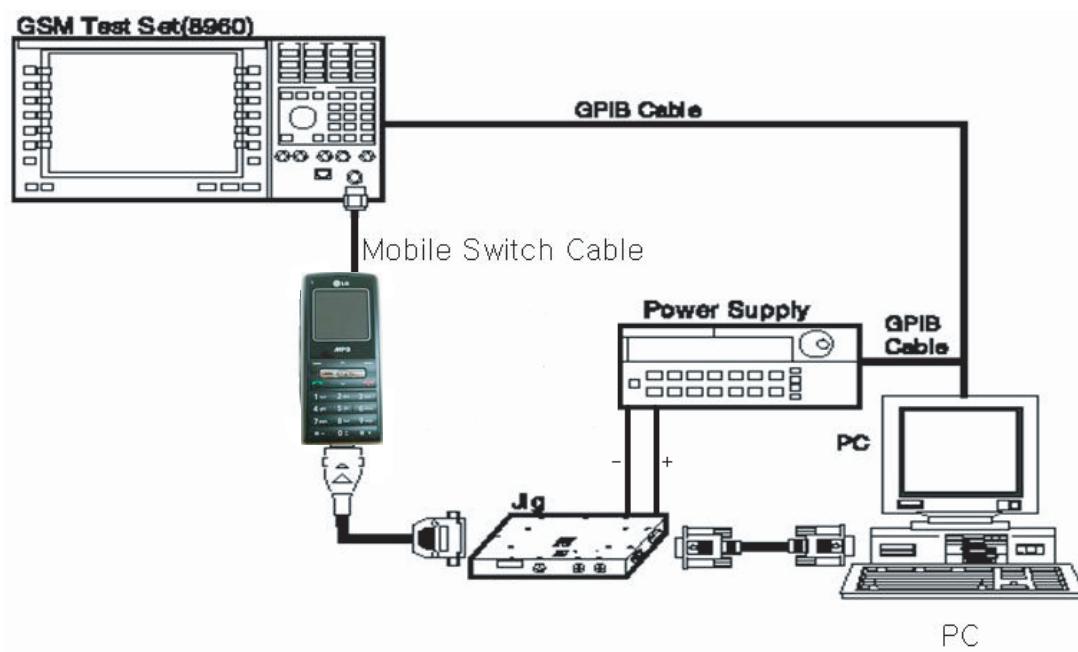


Figure 12.2.1 Equipment Setup

12. AUTO CALIBRATION

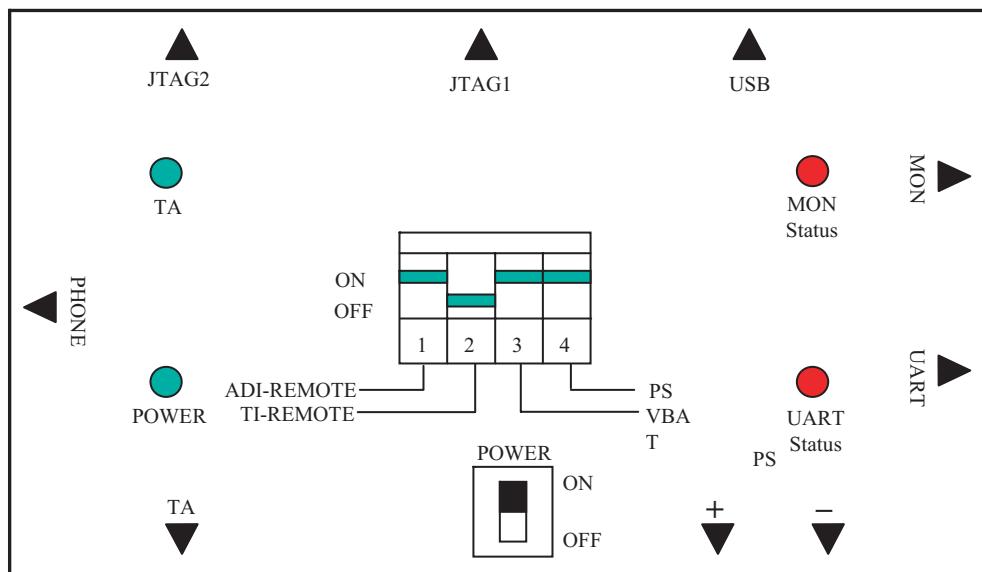


Figure 12.2.2 The top view of Test JIG

12.3 Test Jig Operation

Power Source	Description
Power Supply	Usually 4.0V

Table 12-2 Jig Power

Switch Number	Name	Description
Switch 1	ADI-REMOTE	In ON state, phone is awaked. It is used ADI chipset.
Switch 2	TI-REMOTE	In ON state, phone is awaked. It is used TI chipset.
Switch 3	VBAT	Power is provided for phone from battery
Switch 4	PS	Power is provided for phone from Power supply

Table 12-3 Jig DIP Switch

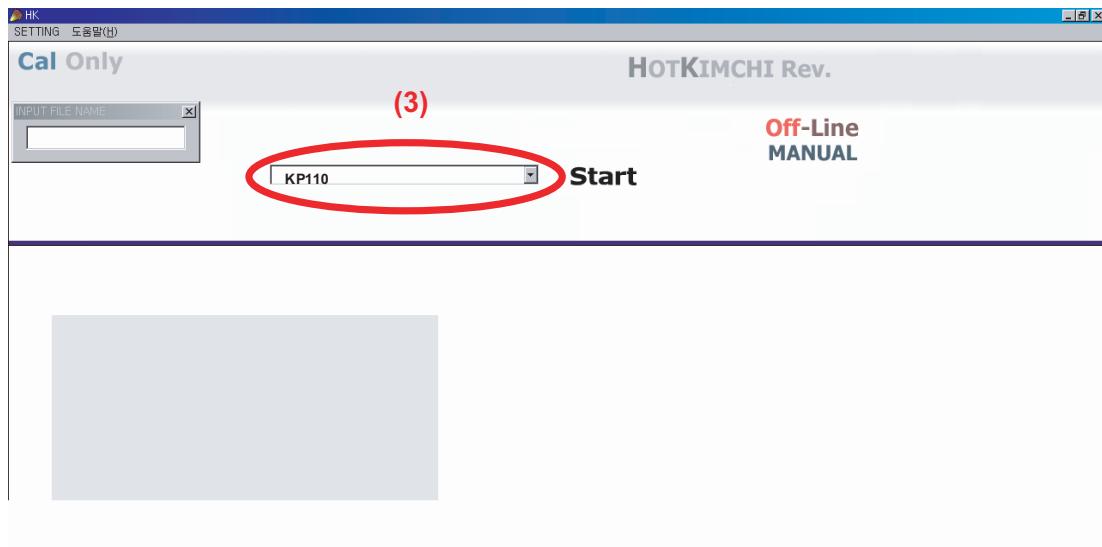
LED Number	Name	Description
LED 1	Power	Power is provided for Test Jig
LED 2	TA	Indicate charging state of the phone battery
LED 3	UART	Indicate data transfer state through the UART port
LED 4	MON	Indicate data transfer state through the MON port

Table 12-4 LED Description

1. Connect as Fig 6-2(RS232 serial cable is connected between COM port of PC and MON port of TEST JIG, in general)
2. Set the Power Supply 4.0V
3. Set the 3rd, 4th of DIP SW ON state always
4. Press the Phone power key, if the Remote ON is used, 1st ON state

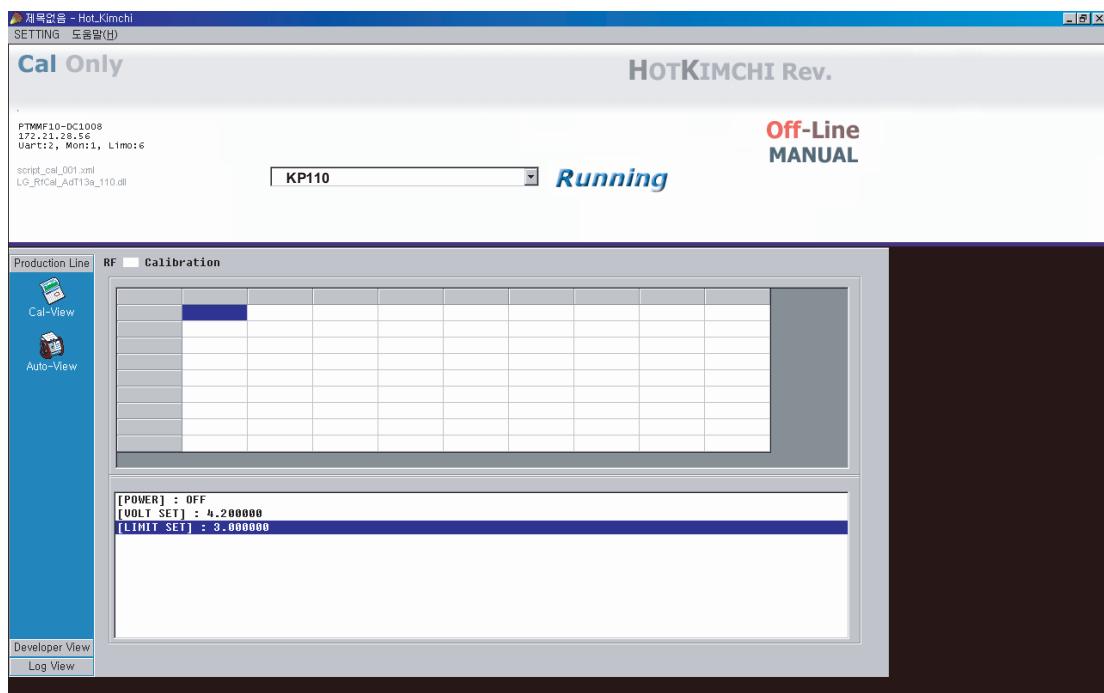
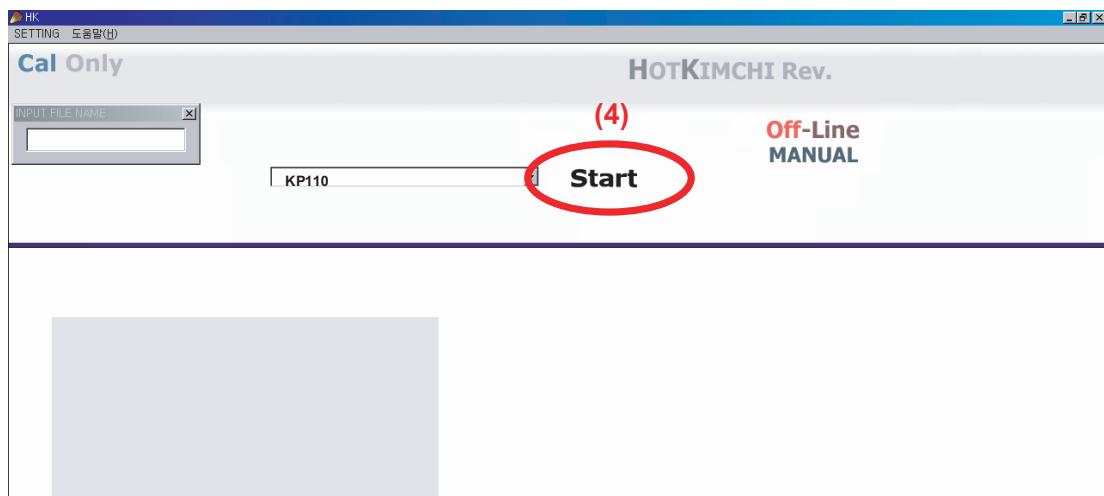
12.4 Procedure

1. Connect as Fig 11.2.2 (RS232 serial cable is connected between COM port of PC and MON port of TEST JIG, in general.)
2. Run Hot_Kimchi.exe to start calibration.
3. From the Calibration menu, Select KP110!



12. AUTO CALIBRATION

4. Press Calibration START



12.5 AGC

This procedure is for Rx calibration.

In this procedure, We can get RSSI correction value. Set band EGSM and press Start button the result window will show correction values per every power level and gain code and the same measure is performed per every frequency.

12.6 APC

This procedure is for Tx calibration.

In this procedure you can get proper scale factor value and measured power level.

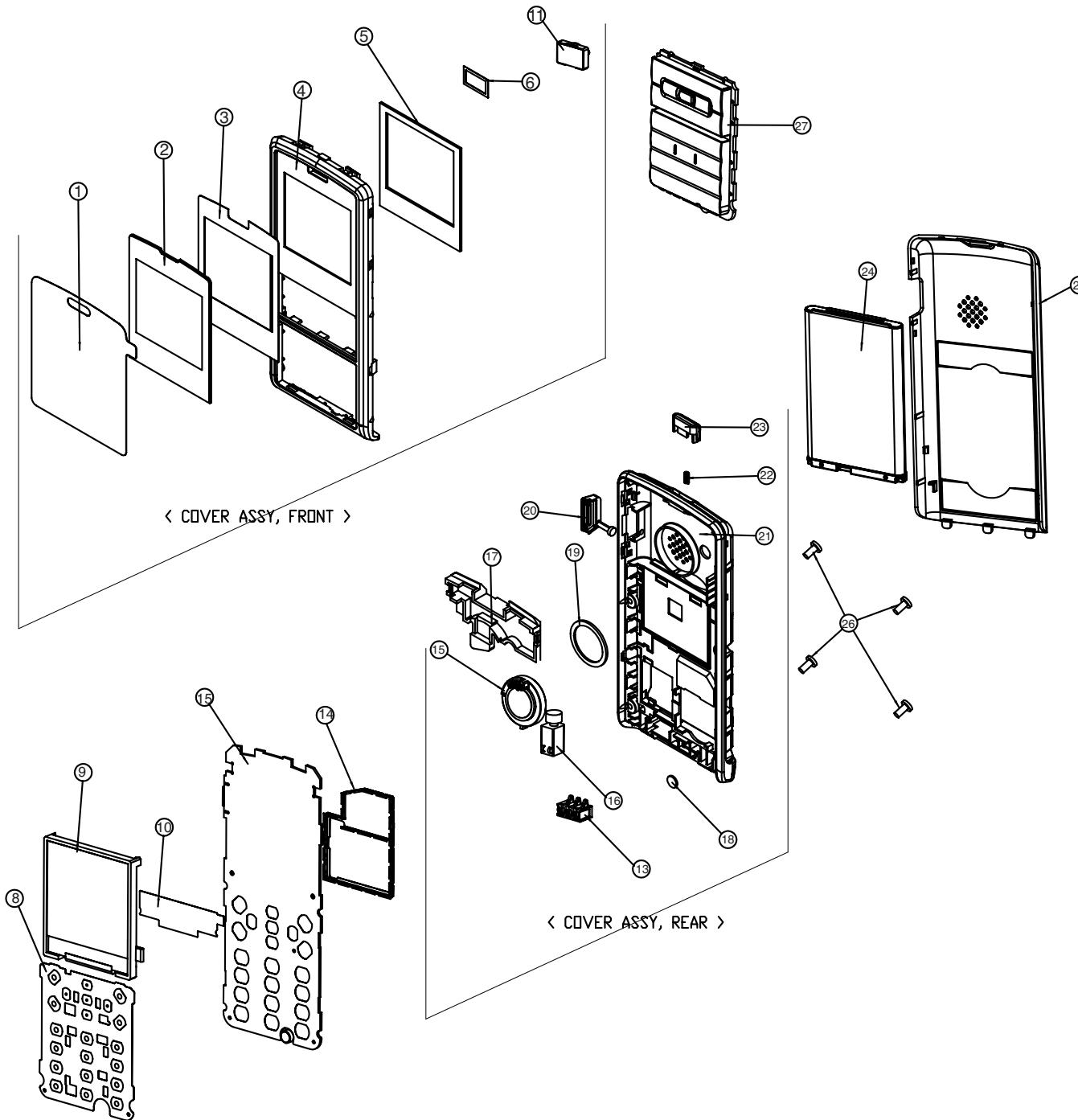
12.7 ADC

This procedure is for battery calibration.

You can get main Battery Config Table and temperature Config Table will be reset.

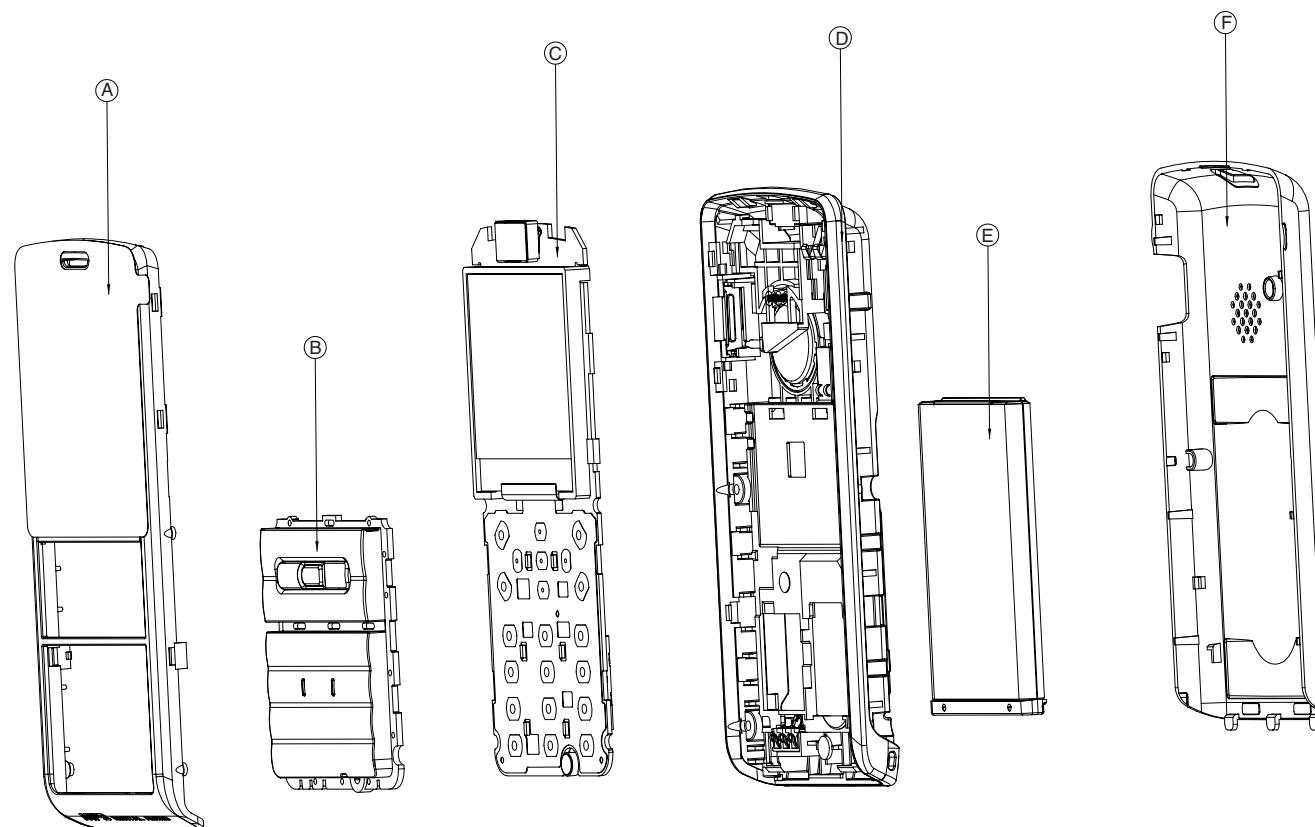
13. EXPLODED VIEW & REPLACEMENT PART LIST

13.1 EXPLODED VIEW



NO.	DESCRIPTION	Q'TY	DRAWING NO.	REMARK
27	KEYPAD	1	ABGF0000603	
26	SCREW	4	GMEY0002001	
25	COVER,BATTERY	1	MCJA0050602	
24	BATTERY CELL	1	SBPL0089901	
23	LOCKER,BATTERY	1	MLEA0041102	
22	SPRING,COIL	1	MSDB0004101	
21	COVER,REAR	1	MCJN0073202	
20	CAP,EARPHONE JACK	1	MCCC0048702	
19	PAD,SPEAKER	1	MPBN0047501	
18	PAD,MIKE	1	MPBH0033601	
17	INTENNA	1	SNGF0031501	
16	VIBRATOR	1	SJMY0007904	
15	SPEAKER	1	SUSY0022601	
14	SHIELD CAN	1	MCBA0023501	
13	BATTERY CONNECTOR	1	ENZY0019901	
12	MAIN PCB	1	SPFY0161701	
11	RECEIVER	1	SURY0013001	
10	TAPE SHIELD	1	MTAC0060201	
9	LCD MODULE	1	SVLM0024402	
8	DOME SHEET	1	ADCA0071901	
6	PAD,RECEIVER	1	MPBM0020101	
5	PAD,LCD	1	MPBG0067501	
4	COVER,FRONT	1	MCJK0077503	
3	TAPE,WINDOW	1	MTAD0075201	
2	WINDOW,LCD	1	MWAC0085401	
1	TAPE, PROTECTION	1	MTAB0168901	

ASS'Y EXPLODED VIEW



NO.	DESCRIPTION	Q'TY	DRAWING NO.	REMARK
F	COVER BATTERY	1	MPBM00201##	
E	BATTERY CELL	1	SBPL00899##	
D	REAR ASSY	1	ACGM00968##	
C	PCB ASSY	1	SAFY02533##	
B	KEYPAD	1	ABGF00006##	
A	FRONT ASSY	1	ACGK00960##	

13. EXPLODED VIEW & REPLACEMENT PART LIST

13.2 Replacement Parts <Mechanic component>

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Spec	Color	Remark
1		GSM,BAR/FILP	TGSM0056803		Black	
2	AAAY00	ADDITION	AAAY0292101		Black	
2	APEY00	PHONE	APEY0481104		Black	
3	ABGF00	BUTTON ASSY,MAIN	ABGF0000603		Black	27,B
3	ACGK00	COVER ASSY,FRONT	ACGK0096002		Black	A
4	MCJK00	COVER,FRONT	MCJK0077503	MOLD, PC LUPOY SC-1004A, , , ,	Black	4
4	MICE00	INSERT,NUT	MICE0005501	COMPLEX, (empty), , , ,	Without Color	
4	MPBG00	PAD,LCD	MPBG0067501	COMPLEX, (empty), , , ,	Without Color	5
4	MPBM00	PAD,RECEIVER	MPBM0020101	COMPLEX, (empty), , , ,	Without Color	6,F
4	MTAB00	TAPE,PROTECTION	MTAB0226001	COMPLEX, (empty), , , ,	Without Color	
4	MTAD00	TAPE,WINDOW	MTAD0075201	COMPLEX, (empty), , , ,	Without Color	3
4	MWAC00	WINDOW,LCD	MWAC0085401	CUTTING, PMMA MR 200, , , ,	Black	2
4	MCCC00	CAP,EARPHONE JACK	MCCC0048702	MOLD, Urethane Rubber S185A, , , ,	Black	20
4	MCJN00	COVER,REAR	MCJN0073202	MOLD, PC LUPOY SC-1004A, , , ,	Silver	21
4	MLAB00	LABEL,A/S	MLAB0000601	PRINTING, (empty), , , ,	Without Color	
4	MLEA00	LOCKER,BATTERY	MLEA0041102	MOLD, PC LUPOY SC-1004A, , , ,	Black	23
4	MPBH00	PAD,MIKE	MPBH0033601	COMPLEX, (empty), , , ,	Without Color	18
4	MPBN00	PAD,SPEAKER	MPBN0047501	COMPLEX, (empty), , , ,	Without Color	19
4	MSDC00	SPRING,LOCKER	MSDC0015601	COMPLEX, (empty), , , ,	Silver	
3	MLAK00	LABEL,MODEL	MLAK0018622	PRINTING, (empty), , , ,	Without Color	
5	MCBA00	CAN,SHIELD	MCBA0023501	PRESS, NS, 0.2, , , ,	Without Color	14
5	MTAC00	TAPE,SHIELD	MTAC0060201	COMPLEX, (empty), , , ,	Without Color	10

13. EXPLODED VIEW & REPLACEMENT PART LIST

<Main component>

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Spec	Color	Remark
4	SURY00	RECEIVER	SURY0013002	PIN ,105 dB,32 ohm,11*07 ,; , , , ,PIN ,		
3	ACGM00	COVER ASSY,REAR	ACGM0096802		Black	D
4	ENZY00	CONNECTOR,ETC	ENZY0019901	3 PIN,3 mm,STRAIGHT , ,		13
4	SJMY00	VIBRATOR,MOTOR	SJMY0007904	3 V,.1 A,4*8 ,height 5.8mm ; ,3V , , ,11000 , , ,		16
4	SNGF00	ANTENNA,GSM,FIXED	SNGF0033201	3.0 ,-2.0 dBd,, ,internal, GSM900/1800 ; ,DUAL ,-2.0 ,50 ,3.0		
4	SUSY00	SPEAKER	SUSY0022601	PIN ,8 ohm,90 dB,17 mm,Spring Contact Type		15
3	GMEY00	SCREW MACHINE,BIND	GMEY0002001	1.4 mm,3 mm,MSWR3(BK) ,B ,+ ,HEAD t=0.6, HEAD d2.7		26
3	SAFY00	PCB ASSY,MAIN	SAFY0253302			C
4	SAFB00	PCB ASSY,MAIN,INSERT	SAFB0081101		Black	
5	ADCA00	DOME ASSY,METAL	ADCA0071901		Without Color	8
5	BTAZ00	TAPE	MTAZ0211801	COMPLEX, (empty), , , ,	Without Color	
5	SUMY00	MICROPHONE	SUMY0003802	FPCB ,-42 dB,4*1.5 ,		
5	SVLM00	LCD MODULE	SVLM0024403	MAIN ,128*128 ,35.78*39.7*2.7 ,65k ,CSTN ,TM ,ST7637 ,1.52" Serial IF Second_developement		
		LCD MODULE	SVLM0024404	MAIN ,128*128 ,35.78*39.7*2.7 ,65k ,CSTN ,TM ,ST7637 ,1.52inch Frame Material Change for drop quality		
4	SAFF00	PCB ASSY,MAIN,SMT	SAFF0170302			
5	MLAZ00	LABEL	MLAZ0038301	PID Label 4 Array	Without Color	
5	SAFC00	PCB ASSY,MAIN,SMT BOTTOM	SAFC0106201			
6	BA201	BATTERY,CELL,LITHIUM	SBCL0001701	2 V,0.5 mAh,CYLINDER ,Reflow type BB, Max T 1.67, phi 4.8, Pb-Free		
6	C101	CAP,TANTAL,CHIP	ECTH0001702	4.7 uF,10V ,M ,STD ,2012 ,R/TP		
6	C102	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C103	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C104	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C105	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C106	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C107	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C108	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C109	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C110	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C111	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C112	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		

13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C113	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C114	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C115	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C116	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C117	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C118	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C121	CAP,CERAMIC,CHIP	ECCH0000163	47 nF,10V,K,X5R,HD,1005,R/TP		
6	C122	CAP,CERAMIC,CHIP	ECCH0000163	47 nF,10V,K,X5R,HD,1005,R/TP		
6	C123	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C124	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C125	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C126	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C127	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C128	CAP,CHIP,MAKER	ECZH0003124	68 nF,16V ,K ,X7R ,HD ,1005 ,R/TP		
6	C129	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C130	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C131	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C132	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C133	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C134	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C135	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C136	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C137	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C138	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C139	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C140	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C201	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C202	CAP,TANTAL,CHIP	ECTH0001701	10 uF,6.3V ,M ,L_ESR ,2012 ,R/TP		
6	C203	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C204	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C205	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C206	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C207	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C208	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C209	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C210	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C211	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		

13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C215	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C216	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C217	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C218	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C219	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C220	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C221	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C222	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C223	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C224	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C226	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C228	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C229	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C232	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C234	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C235	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C236	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C241	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C242	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C243	CAP,CHIP,MAKER	ECZH0001217	470 nF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C244	CAP,CHIP,MAKER	ECZH0001217	470 nF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C245	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C246	CAP,CERAMIC,CHIP	ECCH0005603	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP		
6	C247	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C301	CAP,CERAMIC,CHIP	ECCH0002101	1000000 pF,10V ,K ,B ,TC ,2012 ,R/TP , , , [empty] , [empty] , [empty] , [empty] , [empty] , [empty] , 1.25 mm		
6	C302	CAP,CERAMIC,CHIP	ECCH0002101	1000000 pF,10V ,K ,B ,TC ,2012 ,R/TP , , , [empty] , [empty] , [empty] , [empty] , [empty] , [empty] , 1.25 mm		
6	C303	CAP,CERAMIC,CHIP	ECCH0002101	1000000 pF,10V ,K ,B ,TC ,2012 ,R/TP , , , [empty] , [empty] , [empty] , [empty] , [empty] , [empty] , 1.25 mm		
6	C304	CAP,CERAMIC,CHIP	ECCH0002101	1000000 pF,10V ,K ,B ,TC ,2012 ,R/TP , , , [empty] , [empty] , [empty] , [empty] , [empty] , [empty] , 1.25 mm		
6	C305	CAP,CERAMIC,CHIP	ECCH0002101	1000000 pF,10V ,K ,B ,TC ,2012 ,R/TP , , , [empty] , [empty] , [empty] , [empty] , [empty] , [empty] , 1.25 mm		
6	C306	CAP,CERAMIC,CHIP	ECCH0002101	1000000 pF,10V ,K ,B ,TC ,2012 ,R/TP , , , [empty] , [empty] , [empty] , [empty] , [empty] , [empty] , 1.25 mm		
6	C309	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C310	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C311	CAP,CERAMIC,CHIP	ECCH0003002	10000000 pF,10V ,Z ,Y5V ,HD ,2012 ,R/TP , , , [empty] , [empty] , [empty] , [empty] , [empty] , [empty] , 1.25 mm		

13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C313	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C315	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C316	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C317	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C318	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C319	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C320	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C321	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C322	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C323	CAP,CERAMIC,CHIP	ECCH0003002	10000000 pF,10V ,Z ,Y5V ,HD ,2012 ,R/TP , , ,,[empty] ,,[empty] ,,[empty] ,,[empty] ,,[empty] ,,[empty] ,1.25 mm		
6	C324	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C325	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C326	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C327	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C328	CAP,CERAMIC,CHIP	ECCH0006501	10000000 pF,6.3V ,K ,X5R ,TC ,2012 ,R/TP , , ,,[empty] ,,[empty] ,,[empty] ,,[empty] ,,[empty] ,,[empty] ,1.25 mm		
6	C329	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C330	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C331	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C332	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C333	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C334	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C335	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C336	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C337	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C338	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C339	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C340	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C341	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C342	CAP,CERAMIC,CHIP	ECCH0007802	4.7 uF,10V ,M ,X5R ,TC ,1608 ,R/TP		
6	C343	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C344	CAP,CERAMIC,CHIP	ECCH0003002	10000000 pF,10V ,Z ,Y5V ,HD ,2012 ,R/TP , , ,,[empty] ,,[empty] ,,[empty] ,,[empty] ,,[empty] ,,[empty] ,1.25 mm		
6	C345	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C346	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C347	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C348	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		

13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C349	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C350	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C351	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C352	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C353	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C354	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C355	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C356	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C357	CAP,CERAMIC,CHIP	ECCH0000151	4.7 nF,25V,K,X7R,HD,1005,R/TP		
6	C358	CAP,CERAMIC,CHIP	ECCH0000109	8 pF,50V,D,NP0,TC,1005,R/TP		
6	C359	CAP,CERAMIC,CHIP	ECCH0000109	8 pF,50V,D,NP0,TC,1005,R/TP		
6	C401	CAP,CERAMIC,CHIP	ECCH0002101	1000000 pF,10V ,K ,B ,TC ,2012 ,R/TP , , , [empty] , [empty] , [empty] , [empty] , [empty] , [empty] , 1.25 mm		
6	C402	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C403	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C404	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C405	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C407	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP		
6	C408	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C409	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C411	CAP,CERAMIC,CHIP	ECCH0003002	10000000 pF,10V ,Z ,Y5V ,HD ,2012 ,R/TP , , , [empty] , [empty] , [empty] , [empty] , [empty] , [empty] , 1.25 mm		
6	C412	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C413	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C414	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C415	CAP,TANTAL,CHIP	ECTH0003401	33 uF,6.3V ,M ,STD ,3216 ,R/TP		
6	C416	CAP,TANTAL,CHIP	ECTH0003401	33 uF,6.3V ,M ,STD ,3216 ,R/TP		
6	C418	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C419	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C422	CAP,CERAMIC,CHIP	ECCH0000391	1 uF,50V ,Z ,Y5V ,HD ,2012 ,R/TP		
6	C424	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C431	CAP,CERAMIC,CHIP	ECCH0003002	10000000 pF,10V ,Z ,Y5V ,HD ,2012 ,R/TP , , , [empty] , [empty] , [empty] , [empty] , [empty] , [empty] , 1.25 mm		
6	C432	CAP,CHIP,MAKER	ECZH0000841	56 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C435	CAP,CERAMIC,CHIP	ECCH0000391	1 uF,50V ,Z ,Y5V ,HD ,2012 ,R/TP		
6	C436	CAP,TANTAL,CHIP,MAKER	ECTZ0003701	10 uF,6.3V ,M ,STD ,2012 ,R/TP		
6	C437	CAP,TANTAL,CHIP,MAKER	ECTZ0003701	10 uF,6.3V ,M ,STD ,2012 ,R/TP		
6	C502	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		

13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C504	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C505	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C506	CAP,TANTAL,CHIP	ECTH0002001	10 uF,10V ,M ,STD ,2012 ,R/TP		
6	C507	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C508	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C509	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C510	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		
6	C511	CAP,CHIP,MAKER	ECZH0000816	12 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C512	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C513	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C514	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C515	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C516	CAP,CHIP,MAKER	ECZH0000849	200 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C517	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C518	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C520	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C521	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C522	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C523	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C524	CAP,CERAMIC,CHIP	ECCH0000104	3 pF,50V,C,NP0,TC,1005,R/TP		
6	C525	CAP,CERAMIC,CHIP	ECCH0000104	3 pF,50V,C,NP0,TC,1005,R/TP		
6	C526	CAP,CERAMIC,CHIP	ECCH0001001	6.8 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C527	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C528	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C529	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C530	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C531	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C532	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C533	CAP,CERAMIC,CHIP	ECCH0001001	6.8 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C534	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C535	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C536	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C537	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C538	CAP,CERAMIC,CHIP	ECCH0000117	27 pF,50V,J,NP0,TC,1005,R/TP		
6	C539	CAP,CHIP,MAKER	ECZH0000839	4.7 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	CN401	CONNECTOR,I/O	ENRY0006401	18 PIN,0.4 mm,ANGLE , ,H=2.5, Reverse Type		
6	D101	DIODE,SWITCHING	EDSY0017301	VSM ,15 V,100 mA,R/TP ,PB-FREE		

13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	D102	DIODE,SWITCHING	EDSY0010501	ESC ,30 V,100 mA,R/TP ,SWITCH DIODE		
6	D110	DIODE,ZENER	EDNY0013602	EMD2 ,5.1 V,150 mW,R/TP ,; ,,[empty] ,,[empty] ,,[empty] ,,[empty] ,,[empty]		
6	D201	DIODE,SWITCHING	EDSY0014001	SMT ,20 V,200 A,R/TP ,		
6	FB401	FILTER,BEAD,CHIP	SFBH0008105	1800 ohm,1005 ,Chip bead ; ,1800ohm ; ,,[empty] ,R/TP		
6	FB402	FILTER,BEAD,CHIP	SFBH0008105	1800 ohm,1005 ,Chip bead ; ,1800ohm ; ,,[empty] ,R/TP		
6	FB403	FILTER,BEAD,CHIP	SFBH0008105	1800 ohm,1005 ,Chip bead ; ,1800ohm ; ,,[empty] ,R/TP		
6	FB404	FILTER,BEAD,CHIP	SFBH0008105	1800 ohm,1005 ,Chip bead ; ,1800ohm ; ,,[empty] ,R/TP		
6	FL501	FILTER,SAW,DUAL	SFSB0001401	942.5 MHz,35 MHz,2.1 dB,20 dB,1842.5 MHz,75 MHz,2.3 dB,12 dB,2.0*1.6*0.68 ,SMD ,925M~960M,1805M~1880M,10p,B,150_82,150_15,EGS M+DCS Rx ; ,942.5 ,1842.5 ,2.0*1.6*0.68 ,SMD ,R/TP		
6	J201	CONN,SOCKET	ENSY0018701	6 PIN,ETC , ,2.54 mm,H=1.8		
6	J202	CONNECTOR,FFC/FPC	ENQY0014701	13 PIN, mm,ANGLE , ,; ,0.30MM ,FPC ,ANGLE ,BOTTOM ,SMD ,[empty] ,LOCKING ,		
6	J301	CONN,SOCKET	ENSY0017701	8 PIN,ETC , , mm, Micro-SD, Hinge type		
6	L301	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
6	L302	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
6	L303	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
6	L304	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
6	L401	INDUCTOR,CHIP	ELCH0001556	270 nH,J ,1608 ,R/TP ,		
6	L501	INDUCTOR,CHIP	ELCH0001406	4.7 nH,S ,1005 ,R/TP ,PBFREE		
6	L502	INDUCTOR,CHIP	ELCH0001009	1.2 nH,S ,1005 ,R/TP ,		
6	L504	INDUCTOR,CHIP	ELCH0009110	5.1 nH,J ,1005 ,R/TP ,chip coil		
6	L505	INDUCTOR,CHIP	ELCH0001401	15 nH,J ,1005 ,R/TP ,Pb Free		
6	L506	INDUCTOR,CHIP	ELCH0001417	33 nH,J ,1005 ,R/TP ,PBFREE		
6	L508	INDUCTOR,CHIP	ELCH0001406	4.7 nH,S ,1005 ,R/TP ,PBFREE		
6	Q201	TR,BJT,NPN	EQBN0007101	EMT3 ,0.15 W,R/TP ,LOW FREQUENCY		
6	R101	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R102	RES,CHIP	ERHY0000512	10M ohm,1/16W,J,1608,R/TP		
6	R103	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R105	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R107	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R108	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R109	RES,CHIP,MAKER	ERHZ0000527	200 ohm,1/6W ,J ,1005 ,R/TP		
6	R110	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R116	RES,CHIP,MAKER	ERHZ0000312	68 Kohm,1/16W ,F ,1005 ,R/TP		
6	R130	RES,CHIP,MAKER	ERHZ0000213	120 Kohm,1/16W ,F ,1005 ,R/TP		
6	R202	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		

13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R204	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R205	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R206	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R207	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	R208	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R209	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R210	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R213	RES,CHIP,MAKER	ERHZ0000702	10 ohm,1/10W ,J ,1608 ,R/TP		
6	R214	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R215	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R216	RES,CHIP	ERHY0000150	75K ohm,1/16W,F,1005,R/TP		
6	R218	RES,CHIP,MAKER	ERHZ0000422	15 Kohm,1/16W ,J ,1005 ,R/TP		
6	R219	RES,CHIP	ERHY0000272	43K ohm,1/16W,J,1005,R/TP		
6	R223	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R224	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R226	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R227	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R230	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R232	RES,CHIP,MAKER	ERHZ0000414	120 Kohm,1/16W ,J ,1005 ,R/TP		
6	R233	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R234	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R235	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R236	RES,CHIP,MAKER	ERHZ0000414	120 Kohm,1/16W ,J ,1005 ,R/TP		
6	R301	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R302	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R303	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R306	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R308	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R310	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R311	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R312	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R313	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R315	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R317	RES,CHIP	ERHY0000189	3.9 Kohm,1/16W ,F ,1005 ,R/TP		
6	R318	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R319	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R320	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		

13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R321	RES,CHIP,MAKER	ERHZ0000237	20 Kohm,1/16W ,F ,1005 ,R/TP		
6	R322	RES,CHIP,MAKER	ERHZ0000529	1.5 Kohm,1/16W ,J ,1005 ,R/TP		
6	R325	RES,CHIP,MAKER	ERHZ0000307	6200 ohm,1/16W ,F ,1005 ,R/TP		
6	R326	RES,CHIP,MAKER	ERHZ0000487	470 Kohm,1/16W ,J ,1005 ,R/TP		
6	R329	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R331	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R332	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R333	RES,CHIP,MAKER	ERHZ0000501	620 ohm,1/16W ,J ,1005 ,R/TP		
6	R334	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R335	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R404	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R407	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R410	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R411	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R412	RES,CHIP,MAKER	ERHZ0000529	1.5 Kohm,1/16W ,J ,1005 ,R/TP		
6	R413	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R414	RES,CHIP,MAKER	ERHZ0000485	4700 ohm,1/16W ,J ,1005 ,R/TP		
6	R415	RES,CHIP,MAKER	ERHZ0000485	4700 ohm,1/16W ,J ,1005 ,R/TP		
6	R418	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R419	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R420	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R422	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R424	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R428	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R429	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R501	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R502	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R503	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R504	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R508	RES,CHIP,MAKER	ERHZ0000522	24 ohm,1/16W ,J ,1005 ,R/TP		
6	R509	RES,CHIP,MAKER	ERHZ0000205	1 Mohm,1/16W ,F ,1005 ,R/TP		
6	R510	RES,CHIP,MAKER	ERHZ0000242	220 ohm,1/16W ,F ,1005 ,R/TP		
6	R511	RES,CHIP,MAKER	ERHZ0000242	220 ohm,1/16W ,F ,1005 ,R/TP		
6	R512	RES,CHIP,MAKER	ERHZ0000327	180 ohm,1/16W ,F ,1005 ,R/TP		
6	R513	RES,CHIP,MAKER	ERHZ0000457	30 ohm,1/16W ,J ,1005 ,R/TP		
6	R514	RES,CHIP,MAKER	ERHZ0000327	180 ohm,1/16W ,F ,1005 ,R/TP		
6	R515	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		

13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	SC501	FRAME,SHIELD	MFEA0017701	COMPLEX, (empty), , , ,	Without Color	
6	SW501	CONN,RF SWITCH	ENWY0006001	Press ,SMD ,8 dB, ;, ,0.40MM ,STRAIGHT ,DIP ,SMD ,,[empty] ,,[empty] , ,		
6	U101	IC	EUSY0354201	BGA ,264 PIN,R/TP ,GSM/GPRS Baseband ,; ,IC,Digital Baseband Processor		
6	U201	IC	EUSY0323801	BGA ,64 PIN,R/TP ,128Mb/64Mb , 110 nm, MirroBit		
6	U202	IC	EUSY0238702	TSOPJW-12 ,12 PIN,R/TP ,3PORT Charge Pump(AAT2154 Low cost version)		
6	U203	IC	EUSY0349001	BGA ,8 PIN,R/TP ,Class AB SPK AMP ,; ,IC,Audio Amplifier		
6	U204	IC	EUSY0340301	uMLP ,10 PIN,R/TP ,typ Rdson 0.4ohm, 1.4X1.8 ,; ,IC,Analog Switch		
6	U301	IC	EUSY0333001	SON1612 ,6 PIN,R/TP ,3.3V, 150mA LDO Pb-Free, Active High		
6	U302	IC	EUSY0319001	WDFN-8L ,8 PIN,R/TP ,300mA/300mA 2.8V/1.8V Dual LDO		
6	U304	IC	EUSY0352601	QFN ,10 PIN,R/TP ,Single Input, 28V OVP ,; ,IC,Charger		
6	U305	IC	EUSY0351501	FBGA ,100 PIN,R/TP ,MP3,USB2.0 ,; ,IC,Digital Signal Processors		
6	U401	IC	EUSY0355701	PLP1010-4 ,4 PIN,R/TP ,150mA 2.8V Single LDO ,; ,IC,Voltage Regulator		
6	U402	IC	EUSY0340301	uMLP ,10 PIN,R/TP ,typ Rdson 0.4ohm, 1.4X1.8 ,; ,IC,Analog Switch		
6	U403	IC	EUSY0356501	QFN ,20 PIN,R/TP ,FM Tuner, 3*3*0.55 ,; ,IC Assembly		
6	U405	IC	EUSY0354101	QFN ,10 PIN,R/TP ,OVLO 6.8-7.6 ,; ,IC,Charger		
6	U501	IC	EUSY0077201	SC70 ,5 PIN,R/TP ,Inverter Gate, Pb Free		
6	U502	RF MODULE,HANDSET	SMRH0004501	MHz, MHz,Dual band for EU ,ASM+PAM		
6	U503	IC	EUSY0280101	LFCSP-32 ,32 PIN,R/TP ,GSM QUAD BAND TRANSCEIVER, Othello G.		
6	VA201	DIODE,TVS	EDTY0009101	SOD-923 ,5 V,150 mW,R/TP ,1.0*0.6*0.4		
6	VA202	DIODE,TVS	EDTY0009101	SOD-923 ,5 V,150 mW,R/TP ,1.0*0.6*0.4		
6	VA203	VARISTOR	SEVY0004101	5.6 V, ,SMD ,360pF, 1005		
6	VA204	VARISTOR	SEVY0004101	5.6 V, ,SMD ,360pF, 1005		
6	VA207	VARISTOR	SEVY0005201	5.5 V, ,SMD ,1005, 50pF		
6	VA401	VARISTOR	SEVY0007301	5 V,<0.5pF ,SMD ,		
6	VA402	VARISTOR	SEVY0007301	5 V,<0.5pF ,SMD ,		
6	VA403	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA404	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	VA405	VARISTOR	SEVY0001001	14 V, ,SMD ,50pF, 1005		
6	X101	X-TAL	EXXY0004601	.032768 MHz,20 PPM,7 pF,65000 ohm,SMD ,6.9*1.4*1.3 ,		
6	X501	X-TAL	EXXY0025201	26 MHz,10 PPM,11 pF,60 ohm,SMD ,3.2*2.5*0.75 ,exclusive use at ADI RFIC ,; ,10PPM , , ,SMD ,P/TP		

13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
5	SAFD00	PCB ASSY,MAIN,SMT TOP	SAFD0104701			
6	C212	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C213	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C214	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C239	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C240	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	LD201	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
6	LD202	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
6	LD203	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
6	LD204	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
6	LD205	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
6	LD206	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
6	PCB,MAIN	PCB,MAIN	SPFY0169901	FR-4 ,0.8 mm,BUILD-UP 4 ,KP110/118/115b/ MAIN PCB ; , , , , ,		
6	R220	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R221	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R222	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R225	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R228	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R229	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R421	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R425	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R426	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R427	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R430	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R431	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R432	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R433	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	VA205	VARISTOR	SEVY0004101	5.6 V , ,SMD ,360pF, 1005		
6	VA206	VARISTOR	SEVY0004101	5.6 V , ,SMD ,360pF, 1005		

13. EXPLODED VIEW & REPLACEMENT PART LIST

13.3 Accessory

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Spec	Color	Remark
1		GSM,BAR/FILP	TGSM0056803		Black	
2	AAAY00	ADDITION	AAAY0292101		Black	
3	MCJA00	COVER,BATTERY	MCJA0050602	MOLD, PC LUPOY SC-1004A, , , ,	Black	25
3	SBPL00	BATTERY PACK,LI-ION	SBPL0089902	3.7 V,900 mAh,1 CELL,PRISMATIC ,KU380 Europe IP BATT, Pb-Free ; ,3.7V ,900mAh ,0.2C ,PRISMATIC ,50x34x46 , ,BLACK ,Innerpack ,Europe Label	Black	E
3	SGEY00	EAR PHONE/EAR MIKE SET	SGEY0003213	; ,10mW ,16 OHM ,105dB ,10KHZ ,450HZ ,[empty] ,BLACK,EARPHONE HOUSING:SILVER ,18P MMI CONNECTOR ,LOW COST STEREO,18P(5P) ,		
3	SSAD00	ADAPTOR,AC-DC	SSAD0028201	100-240V ,5060 Hz,5.6 V,,4 A,CE ,AC-DC Adaptor ; ,85Vac-264Vac ,5.6V +/-0.8V ,400mA ,5060 , ,WALL 2P ,I/O CONNECTOR ,		
		ADAPTOR,AC-DC	SSAD0028202	100-240V ,5060 Hz,5.6 V,0.4 A,CE ,AC-DC Adaptor ; ,85Vac-264Vac ,5.6V (+/-0.8V) ,400mA ,5060 , ,WALL 2P ,I/O CONNECTOR ,		
		ADAPTOR,AC-DC	SSAD0028203	100-240V ,5060 Hz,5.6 V,,4 A,CE ,AC-DC Adaptor ; ,85Vac-264Vac ,5.6V +/-0.8V ,400mA ,5060 , ,WALL 2P ,I/O CONNECTOR ,		

Note

Note
